CHEMICAL INDUSTRIES

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Purchasing Prosperity

FIGURES for the end of the year on production, trade, finance, and employment are beginning to trickle in from all over the world, and they dismay us by revealing that in almost all countries and on practically every economic front the rest of the world has passed the United States on the road back to recovery. The evidence is too impartial, too universal, too plain to be denied. Why then, do we lag behind?

It is not lack of resources. Our gold reserves are greater than at the peak of the last boom. We have more raw materials than any other nation. We are better equipped industrially. We have the largest "home market" and our domestic buying power is still greater by billions than that of any single country.

Physically we are more fit than any nation to climb quickly out of the depression. But mentally we are paralyzed by uncertainty.

Normal business activity is held back. Normal credit is frozen. And all the while the Government pours out money to prime the business engine. It is proposed to spend the staggering sum of ten and a half billions before July first in "recovery works". This outlay will bring the public debt to an all-time record of $31,834,000,000, and yet it is but a pitiful pittance compared to the expenditures of normal business in normal times. It is just about three times the sum commonly spent in a year in building our homes and factories. It is only equal to the value of textiles we normally produce. It is just about a third of what our industries would pay for raw materials and fuel if they were operating on the basis of 1929.

It appears therefore that we lag behind on the road to recovery because our Government is attempting the impossible. Prosperity cannot be purchased. Bad times cannot be cured by law. What government cannot do, business itself alone can do.

Where Credit Is Due American chemical industry may look back with a deal of solid satisfaction upon its performance during the critical year of 1933. God wot, it is no time for smug complacency. But the accomplishment of the past twelve-month is something to be proud of and should furnish inspiration and courage for the year ahead.

It is a trite truism that this industry has passed through the depression comparatively unscathed. This is due to the pivotal position it occupies in our industrial life; but credit is due also to the management of our chemical companies who by their price policies, marketing plans, production programs, and careful financing have shown exceptional appreciation of the true facts of the situation and remarkable ability to meet the situation wisely. In other countries this wisdom and decision has not always been shown by chemical industrialists.

Our chemical leaders have not been content to dig into their naturally strong position and hold the trenches. They have aggressively sallied forth into new fields. This is not only true of extensions to existing plants and the building of new chemical factories; but it is also and very notably true of both new processes and new products. The three hundred and four new chemicals produced during the past two years by our own advertisers and displayed in our booth at the Chemical Exposition is a most striking demonstration of progress in the face of adverse circumstances of which the industry may be most proud and which is the surest guaranty for the future.

"Monkeying With the Buzz-Saw" In 432 B.C. the Roman Senate passed a law to regulate the price of wheat. That attempt, twenty-three centuries ago, was not the first effort to control prices; but it is one of the earliest of which we have a reasonably complete record, not only of the legislation and its administration, but also of the economic background and the results produced. It failed dismally. It made even worse the plight of the Roman citizens it was designed to help. Long before this time Babylon, Egypt, and Greece had attempted price control. Since then most nations have made similar attempts. Half a dozen of the Pharoahs, Alexander the Great, most of the Roman Emperors, Constantine, Charlemagne, Queen Elizabeth, William Pitt, Napoleon, our own Alexander Hamilton, all tried their hand at some form of price control. All sorts of influences have been brought to bear upon all sorts of commodities—corn and wine, salt and gunpowder, spices and dyestuffs, gold and silver—sometimes to depress prices, more often to hold them up. In all the long record there is not one lasting success and many, many examples of injurious results to those for whose benefit the control was essayed.

As the world has become more highly organized it has become increasingly difficult to influence prices. The Roman Empire was able, for several centuries, to hold up the price of the purple dye made from shells by exercising a state monopoly in its manufacture and by imposing heavy taxes on its use. The modern devices of patent protection will not assure the maker of a new coal-tar dye the privileges of monopoly price even during the life of his patents. By the old devices of state monopoly and taxes, the price of such a necessity as salt was, throughout the Middle Ages, very successfully maintained locally and temporarily by strong governments. Tin is a modern necessity from a restricted area with comparatively few producers who, backed by their governments, organized in March, 1931 to control the price which at that time was 27 cents a pound. When this International Committee abandoned its effort in April, 1932 the price had dropped to 19.24 cents. A similar story is told of sugar and coffee, copper and zinc, rubber and silk, nitrates and petroleum, wool and cotton, corn and wheat.

Moreover, the record shows clearly that real prices continually drop. An hour's labor buys more and more goods, and this tendency is marked since man has put machines and chemicals to work.

In the light of past experience and the downward pressure of values, the fallacy of attempting to restore the 1926 price level becomes pure folly when we remember that this arbitrary average was rewritten in 1923, and that the new par was taken at 140 on the scale of the pre-war price level. We have not yet written off the war inflation. We have not yet passed along to the ultimate consumer the technological progress of the past twenty years. Until these two natural and inevitable economic ends are accomplished, we are not upon a sound and stable price basis. Artificially to postpone this liquidation, is begging the question and putting off the evil day. Attempting to raise the price level is tampering with highly complicated forces of dangerous power. Results can only be illusory and temporary. The recoil is most apt to be destructive.

The Law and the Codes

By Edmund B. Quiggle
General Counsel, The National Fertilizer Association

WHEN Congress passed the National Industrial Recovery Act providing for the adoption of codes of fair competition it introduced a new system of law making. These new laws as embodied in the codes are initiated by representative groups of an industry for the government of that industry and are developed by public hearing and by contacts with executive officials of the government.

The system, new in this country, is somewhat analogous to the trade guilds, prevalent in Europe during the middle ages, that exercised certain rights of self government for their particular crafts. The reference of this law-initiating function to the different industries, subject to the approval of the President, does not mean that Congress has abdicated its own functions. Congress has specified in the Act the broad outlines of its desires and left the details to be worked out by the industries with the cooperation and approval of the executive department of our government. In this respect the codes resemble regulations promulgated by the President or a cabinet officer under the general authority of an Act of Congress which have the force and effect of law.

Is the N. R. A. Unconstitutional?

Many questions are involved with respect to the constitutionality of the National Industrial Recovery Act, such as whether Congress has invaded the sovereignty of the States, or delegated its legislative functions to the executive branch of the government, or trespassed upon the rights of person, liberty, or property guaranteed to individual citizens. Opinions on these questions vary widely. Some well-known lawyers have openly expressed their opinion that the Act is unconstitutional. However, I would not at this time advise reliance on that view. In my opinion the wisest course is to rely on the presumption applicable to all Acts of Congress that they are valid, unless decided otherwise by the highest court in the land, and then endeavor to work in harmony with the Act, help it accomplish its best purposes and derive all the benefits that it affords. There have already been several attacks in the lower courts on the validity of the National Industrial Recovery Act as well as upon its companion measure the Agricultural Adjustment Act. In each instance these have been unsuccessful. The courts have sustained the validity of the statute, being influenced largely by the exigencies of our economic situation and the need for adopting the Constitution to meet the unusual requirements of these distressful times.

Regulation of Commerce by Congress

One of the principal powers given to Congress by the Constitution is the power to regulate commerce with foreign nations and among the several States. This is known as the commerce clause of the Constitution. It is relied upon for support of the provisions of the National Industrial Recovery Act which provide for the government of industry through codes of fair competition. Section 3 (b) of the Act provides that after the President shall have approved a code for a trade or industry the provisions of such code shall be the standards of fair competition for such trade or industry, and that any violation of such standards *in or affecting interstate or foreign commerce* shall be deemed an unfair method of competition in commerce within the meaning of the Federal Trade Commission Act. Section 3 (f) provides that any violation of an approved code in any transaction *in or affecting interstate or foreign commerce* shall be a misdemeanor punishable by a fine of not more than $500.00 for each offense.

Enforcement of the provisions of codes of fair competition under the Act depends upon a showing that the violation was in connection with a transaction either in or affecting interstate or foreign commerce. This leads to the inquiry whether local transactions solely within the boundaries of a single State are governed by the code. This question is particularly important not only on account of its legal phases; but also because, if the Code does not nor cannot apply to such local transactions, there is left open an unregu-

lated field of local competition that may be very disturbing in its effects.

No language in the Fertilizer Code confines it to sales or other transactions in interstate or foreign commerce. In terms it applies to and governs all transactions whether in interstate commerce or intrastate commerce and it was intended so to apply. Most Codes thus recognize that interstate and intrastate transactions in a particular course of trade are so interrelated and interwoven, and the situation respecting them is so sensitive, that the conduct of intrastate transactions necessarily affects the interstate transactions with which they compete. Hence, they must both be subject to the same rules, if interstate commerce is to be regulated effectively. That seems to be the intent of the Act, and the Code should be so administered unless the Act is finally held to go beyond the powers of Congress.

Limit of Intrastate Commerce Regulation

The extent to which intrastate commerce can be regulated by codes will not be finally settled until passed upon by the Supreme Court. However, recent decisions of at least two lower courts support the view that intrastate transactions may be regulated in the present emergency as an incident to the power to regulate effectively interstate and foreign commerce. It was held by the District Court of Travis County, Texas, that the Petroleum Code applies not only to interstate commerce but also to local contracts and business which affect interstate commerce. The U. S. District Court for the northern District of California held in another case which involved the Agricultural Adjustment Act:

> The power to regulate interstate commerce is granted in broad terms to the National Congress and this power should not be restrictively construed. Rather it must be construed to give the Congress the power to regulate any and all commerce which may seriously affect the interstate trade. This Court, with propriety, cannot make the narrow holding that the legislative body, under this and analogous statutes, is without power to regulate intrastate commerce as a proper means of achieving the desired regulation of the interstate commerce. In this and other respects this power to regulate must be construed to effectuate the broad purposes of the constitutional grant and of the national policy. * * *
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> To adopt the view that the Constitution is static and that it does not permit Congress from time to time to take such steps as may reasonably be deemed appropriate to the economic preservation of the country, is to insist that the Constitution was created containing the seeds of its own destruction. This Court will not subscribe to such a view.

If the principles announced by those decisions are sustained by the Supreme Court the whole problem will be solved.

Another interesting and important question involves the code upon the operation of the Federal and State anti-trust laws.

The Recovery Act does not amend the anti-trust laws as such. It does, however, contain a section exempting from the anti-trust laws during the time that Title I of the Act is in effect and for sixty days thereafter, any action complying with the provisions of any code, agreement, or license approved, prescribed, or issued and in effect under Title I of the Act. Adoption of a Code does not carry with it a general exemption of the members of the industry from the Federal anti-trust laws. It merely gives them immunity from the anti-trust laws for anything they may do in compliance with the authority or requirements of the Code.

Code Cooperation with Federal Anti-trust Laws

Does the Fertilizer Code, for example permit members of the industry to take any action that might otherwise be in violation of the Federal anti-trust laws? While the Code contains various provisions respecting prices, there is no provision authorizing or contemplating any agreement to fix prices. The situation with respect to price fixing arrangements is the same after the adoption of the Code as it was before. No further latitude is given in that respect. However, section 2 of Article V of the Code with respect to "open price schedules" authorizes and requires the exchange by members of the industry of information as to prices to be charged for fertilizer which probably could not have been done legally under the Federal anti-trust laws without the sanction of the Code.

Case of Maple Flooring Manufacturers' Association

The limit to which the Supreme Court of the United States has gone in approving the legality of an arrangement for disseminating price information between competitors in an industry is expressed in the case of Maple Flooring Manufacturers' Association. It was there held that trade associations or combinations of individuals or corporations, which openly and fairly gather and disseminate information as to the cost of their product, the actual prices it has brought in past transactions, stocks on hand, and approximate cost of transportation from the principal point of shipment to points of consumption, and meet and discuss such statistics without reaching or attempting to reach any agreement or concerted action respecting prices, production or the restraining of competition, do not thereby engage in an unlawful restraint of commerce. The Court was careful to point out that the price information circulated in that case was confined to prices received in sales that had actually taken place and did not include current price quotations or future prices and also that there was no compulsion of any agreement fixing prices or restricting production or competition.

Thus, with respect to open price schedules the Fertilizer Code provides a method for stabilizing prices that otherwise could probably not be carried out legally and effectively.

The far reaching nature of the provisions included in many codes and particularly of their application to local transactions conflicts with State anti-trust laws. Some of the States such as California, Colorado, New Jersey, New York, Ohio, Texas, Virginia and Wisconsin, have obviated this difficulty by enacting emergency legislation designed to harmonize the State anti-trust laws with the National Recovery Act. Wherever this cooperation between the State and the Federal Government exists no problem will develop.

Whether, in the absence of such cooperative legislation, compliance with an approved code is a good defense to a prosecution for violation of the State anti-trust laws cannot at this time be answered with certainty. It depends to a considerable extent upon the broader question as to the power of the Federal Government to control intrastate commerce. One case has recently come up in which the State of Texas, before it enacted its law to cooperate with the National Recovery Act, prosecuted the Standard Oil Company for violation of the State anti-trust law on account of its compliance with the Petroleum Code. The Texas Court held that the Recovery Act in so far as it is valid relieves those acting pursuant to the Act or any code approved under the Act from prosecution under the anti-trust laws of Texas.

Foreign Price Competition

The Recovery Act also provides a remedy for destructive price competition from abroad, which is not unlikely to develop with the raising of price levels in this country. It empowers the President, if he finds any article imported into the United States in such quantities and on such terms and under such conditions as to render ineffective or seriously endanger the maintenance of any code, to restrict such imports by prescribing the terms and conditions of entry or the payment of fees, or by limiting the quantity to be imported, or by licensing importers as a condition to their right to make importations. The investigation leading to such action is to be made by the Tariff Commission and may be started either on motion of the President, himself, or upon complaint of a labor organization, or any trade or industrial organization or group which has in actual operation a code or agreement pursuant thereto.

On October 24th the President issued an executive order regarding the procedure under the imports provision of the Act which authorizes the National Recovery Administration to make preliminary investigations, receive complaints from interested parties, and make recommendations to the President. There has been set up within the National Recovery Administration a new imports division, whose function will be to protect domestic industries operating under codes from harmful foreign competition. In addition to investigating specific complaints filed by industries the imports division will have the responsibility of studying import statistics and otherwise to keep in touch with the situation. After receiving the recommendation of the Administrator the President may either dismiss the complaint or direct the United States Tariff Commission to make an investigation and to hold hearings. Upon the conclusion of this procedure the President will take such action as seems to him necessary to safeguard the codified industries. The initial complaints must be supported by such specific information as may be necessary to establish a prima facie case for investigation under section 3 (e) of the Act.

The Fertilizer Code must be distinguished from an agreement entered into under the Act. An agreement binds only those who give their assent and become parties to it. That is not true of a code. A code after it is approved and goes into effect is binding on all members of the industry specified therein whether they assent to it or not. Neither signature nor assent is necessary to bind them. All must comply with the code who come under its provisions.

Several methods are prescribed in the Act for the enforcement of codes. One is by criminal prosecution of the offender, who in case of conviction shall be fined not more than $500 for each offense, and each day the violation continues shall be deemed a separate offense. Another remedy of enforcement is the injunctive process which involves a proceeding in equity in a U. S. District Court to restrain violations of the code. This is a preventive measure. Likewise the procedure now in use by the Federal Trade Commission may be invoked to prevent violations of standards of fair competition prescribed in a code. As a last resort the President may exercise his power to license recalcitrants in order to enforce their compliance with the code. It will thus be observed that the Act provides ample remedies, both preventive and punitive, for compelling observance.

Economic Stress Creates Demand for Government Supervision

Modern society with its growing complexities tends to multiply laws and regulations with which the business man must comply. In a period of economic disturbance there is a demand and need for even more governmental regulation. The addition of new rules necessarily increases the burdens of the business man and there may be those who for that reason do not welcome the codes. However, the Code should be looked upon as more than merely a new body of restrictive rules. It should be regarded also as an opportunity for the industry by cooperation within itself and with the Government of the United States to take stock of its needs, to eliminate unsound practices, to introduce others which are sound, to simplify its business methods and otherwise to make the industry a firmer and more stable structure.

American Chemicals Under Political Economics

By Williams Haynes

TECHNOLOGY and Commerce have been elbowed out of the center of the stage of American chemical activities by Politics. At the moment certainly, the implications and repercussions of the New Deal are of greatest concern both in the day-by-day operations and the forward planning of our chemical industrialists, yet the whole program—admitted by President Roosevelt to be frankly experimental—cannot be fairly appraised at close range. Therefore, having paid respect to the immediate, overwhelming influence of Government acts, it will be most profitable in this review of the eventful year just past to consider them quite realistically upon the basis only of accomplished fact.

In this light, Mr. Roosevelt's monetary policy is observed to have very seriously delayed the signing of contracts for 1934 chemical deliveries. Uncertainty as to future dollar values was finally in desperation compromised by contracts with firm prices for three or six months and a provision for mutual revision on the basis of production cost of monetary changes.

The debated NRA has increased wages and relieved unemployment, but in the chemical industry its most tangible accomplishment has been the banding together of practically all manufacturers into the Chemical Alliance; the consolidation of the two paint and varnish trade associations, and the building up of what promise to be strong and useful organizations of the plastic material makers, the local distributors of chemicals, and the manufacturers of chemical plant equipment.

From the factual point of view, the Tennessee Valley Authority will put the Government in the fertilizer business by spending $4,000,000 to modernize the Muscle Shoals nitrate plant, and by developing the Tennessee phosphate field in conjunction with a blast furnace phosphoric acid pilot plant pointing towards the manufacture of superphosphates. These activities have encouraged agitation for the utilization of other Government-controlled power sites, especially in the far west, by building additional nitrogen plants. On the other hand, Government economy has curtailed chemical activities by both state and federal agencies, notably in the fields of research and of testing and analytical services in the Bureau of Mines, the Department of Agriculture, and the Bureau of Standards.

The direct effects of Government activities are reflected in the state of chemical trade during 1933. During the first quarter, competition for our restricted chemical demand was sharp from countries whose depreciated currencies gave them a price advantage in our markets. Charges of dumping were frequently lodged. Alkalies from Japan; phosphates from Russia, Japan, and Morocco; sulfate of ammonia from several sources were all notable disturbers. Since the dollar went off gold, and increasingly so since the Rooseveltian rise in gold, chemical imports have dwindled and exports have risen about 20 per cent., with a notable growth during the year in our foreign sales of coal tar crudes, chemical specialties, and the various coatings, but a distinct check in three chemical raw materials—sulfur, the naval stores, and phosphate rock—for which we have long been the most important world factor. International cartel arrangements on phosphates and sulfur will tend to restore the balance upset by disarranged currencies; but the move from raw materials to finished products discernible in our chemical foreign trade is quite in line with the general tendency of all our exports.

Domestic chemical business has been better than during the past two years. For 1932, I estimated that activity for all branches of the industry was not far from 50 per cent. On this basis, the average of the current twelvemonth period must be close to 20 per cent. better. The false boom in the early summer—conspicuous in textiles and leather—has not been sustained; but general chemical sales have been greater throughout the autumn and winter than a year ago, and the glass, paper, and plastic industries, all greedy chemical consumers, have been really busy.

After pointing downward for three years, the trend of chemical prices turned definitely upward during the summer. Two influences have been at work: first, better demand because of better conditions, and second, the abandonment of the gold standard and the adoption of fiscal policies of a character to inspire fear of possible uncontrolled inflation. Imported items and speculative commodities actively traded in on exchanges, such as oils and metals, were naturally the first to advance. Soon spot prices of the heavy chemicals followed. Finally, contract prices for 1934, announced within the past six weeks, are, with few exceptions, higher. Reductions in price are indeed difficult to find. Important chemicals advanced in price for next year's deliveries include the alkalies, chlorine, bichromate of soda, glycerine, sodium silicate, Glauber's salt, ammonium sulfate, anhydrous sodium sulfate and carbon black. These price advances have, in the main, been very modest. Imported and speculative items have risen between ten and twenty per

cent; domestic chemicals of an industrial nature have been advanced only from five to ten per cent., indicating clearly the definite lag in prices as against the decline in the value of the dollar expressed in terms of international exchange. This situation is quite analogous to that which followed England's abandonment of the gold standard, and throughout the list dollar-values of chemicals have not yet gone up to balance the gold-value of the dollar.

Tangible evidence of activity has been the new plant construction of the year. The Sharples Solvents Corporation, specialists in synthetic amyl compounds from pentane, have moved from Belle, W. Va. to Wyandotte, Mich., where their enlarged modern plant is favorably located both as to alkali supplies and the consuming markets. Two new, large producing units of important chemicals are projected in widely separated locations. The Commonwealth Gas Company, of Los Angeles, is building a natural gas carbon black plant to produce a million pounds monthly, and in New England, the Merrimac Chemical Company, Monsanto subsidiary, has started work on an alcohol distillery with a proposed output of 3,000,000 gallons a year.

Growing Alkali Enterprises

Alkali developments, which a few years ago invaded the West Coast, have moved to the far South. The $7,000,000 ammonia-soda plant of the Southern Alkali (a joint enterprise of American Cyanamid and Columbia Alkali) at Corpus Christi, Texas, is being rushed to completion. Mathieson have recently offered their stockholders the right to buy 21,666 additional shares at $30 a share, which additional funds are said to be used for a new plant at Lake Charles, La., and there are persistent rumors that the Allied interests will build a new alkali unit at Baton Rouge, La. Evidently our alkali makers are entertaining very optimistic views on the future industrial development of the southern tier of states, for these proposed expansions are far beyond present consuming ability in this section.

Louisiana is also coming back to the forefront in the sulfur production which, since the collapse of the dome of the Union Sulphur Company, has migrated to the Texas coastal region. January of this year the first shipment was made from the new plant of the Jefferson Lake Oil Company, and in December the Grande Ecaille operation of the Freeport interests was formally opened.

Repeal of Prohibition has resulted in great activity in which the alcohol branch of the industry has taken a large part. U. S. Industrial Alcohol Company and National Distillers formed a subsidiary, Penn-Maryland. Commercial Solvents took over the industrial plant of the Rossville interests. Publicker has organized the Continental Distillery which will operate a new chemico-aging process. American Commercial Alcohol is increasing its distilling capacity at Peoria. In fact, the entire alcohol industry has become interested, through subsidiary or affiliated companies, in some branch of the distilled liquor business.

Despite, or better as a result of, the continued depression there have been several consolidations of importance. Monsanto has acquired control of the Swann companies, giving them important plants in the South and bringing them into a place of real importance in carbon black and the various phosphates. Calco has bought the E. C. Klipstein Company, with its interesting line of intermediates and coal-tar specialties, headed by anthraquinone, and has also taken over sales for the Ultramarine Company, giving them a dominating position in this color. In the barytes field, the de Lore and the National Pigments interests in St. Louis have consolidated, and Mathieson Alkali has acquired the gypsum division of the Certainteed Products Co. American Cyanamid has made the most interesting expansion in buying the General Explosives Co. and the Filtration Equipment Co., which owns the Laughlin process of sewage disposal, the first time a strictly chemical firm has become interested directly in this important field of growing chemical consumption.

Considering the times 1933 has witnessed a remarkable commercial development of new chemical products. As might be expected in the young and fast-growing plastics industry there are some notable introductions. A new thermoplastic, Plioform, from a rubber latex base, has come to the market and two important new modifications of phenolics of higher impact strength, while long steps have been taken towards the wider commercial application of the vinyl compounds. A promising new process is the impregnating of textiles with a phenolic resin, giving a most interesting material that offers prospective competition for coated fabrics of the oiled silk, rubberized, oil-cloth, linoleum, and artificial leather types. Laminated material has appeared of impregnated plywood and lighter colors are made by employing urea plastics, while a new process of bonding laminated to metal has been perfected. Two new fillers—Solka (an alpha cellulose fibre) and Celite (a silica powder)—give fresh possibilities of modifying the physical characteristics of molded plastics. Half a dozen new synthetic resins have appeared, particularly of rezyl and alkyl types; and a new plasticizer for cellulose acetate from du Pont, while Monsanto has introduced three new plasticizers from phthalic and glycollic acids. In the coatings field a new perspiration-proof lacquer has been perfected by the Bell Telephone Laboratories working in collaboration with Roxalin.

From turpentine, upon which they have been conducting an intensive research to develop new markets, the Hercules Powder Company have prepared a long

list of new materials. Many of these are precluded from commercial use by cost of limited supply, nevertheless they are distinct possibilities in such products as alpha pinene, dipentine, abietic acid, bornyl acetate and chloride, and fenchyl amine. In a closely allied field the commercial production of synthetic camphor, while neither a new process nor a new product, has reached a production that totals a quarter of national requirements.

Several years ago, research in the Acheson Oildag laboratories resulted in a patent for the separation of petroleum lubricants by means of acetone, and about 1930, the Imperial Oil of Canada, a Standard of New Jersey affiliate, began experiments with phenol as a dewaxing agent. Out of these researches has come a new solvent extraction of lubricants from hydrocarbons, similar in principle to the ether extraction of crude pyroligneous liquors. There is separation into two liquid phases; a light oil similar to the Pennsylvania paraffin lubricants and a heavy Gulf base type. A wide variety of solvents have been introduced including di-chlor ether, benzol, nitrophenol, furfural, etc., and the process has begun to assume real commercial importance. Another interesting development in the petroleum field is the marketing of three million gallons of iso-propyl alcohol, with 30 per cent. methanol, by Standard of New Jersey, as an anti-freeze through their own gasoline distributing agents and at a price competitive with denatured ethyl alcohol.

Commercial fruition of another old process is the extraction of bromine at a new plant on the Carolina coast, where 26,000 gallons of sea water per minute will be handled to extract 50,000 pounds of bromine a month. This is a joint operation of the Dow and du Pont companies; the Ethyl-Dow Corporation with a capital of $1,500,000. The Dow Chemical Company, through two wholly owned subsidiaries, have expanded in other lines. Their Jones Chemical Company has moved its iodine brine extraction plant from Louisiana to the Pacific Coast, and the Dow Well Company is recharging spent oil wells with an inhibited hydrochloric acid, a development coming out of practical experience with their own brine wells.

Some disturbance of established chemical market equilibrium is threatened by the fast-increasing use of ferric chlorides and sulfides as coagulants in sewage disposal displacing alum, and the steady rise in our domestic output of potash from the Southwest. It is also interesting to note the extensions of flotation operations in the phosphate mining industry with the growing production of triple-super-phosphate, and startling increases in the sale of "dry ice" (CO_2) which has jumped from 40 million pounds in 1929 to 122 millions last year and an estimated total of 155 millions in 1933.

This year's important transplantation of a foreign chemical development to American soil appears to be the sulfonated higher alcohols. These are being marketed under such trade names as Gardinol and Lorenol, and thus make a significant addition to the lengthening list of chemical specialties. This type of merchandising under a trade-marked name has been becoming more and more popular. Plastics, such textile chemicals as detergents, wetting out agents, rayon oils, sulfonated alcohols and oils are now almost always branded in this fashion. Superpyro, a 200 proof anhydrous anti-freeze alcohol; Hydrowax, a base for polishes; Emuwax, a substitute for beeswax; Izen, a waterproof for textiles; WX, a sulfonated olive oil; Triclene, a non-flammable solvent for dry cleaning; Astrulan and Ursulin, synthetic tanstuffs; and Zerone, synthetic methanol for anti-freeze, are all 1933 examples of this tendency which indicates that the chemical industry is reaching forward towards a vertical expansion which will bring it into closer contact with the ultimate consumer.

The patent law continues to concern thoughtful technical men and industrialists. Court decisions have become increasingly technical, and the fundamental questions of what constitutes patentable invention and how the inventor may assure the rights granted in exchange for disclosure seem often to be badly obscured. Three cases of great chemical interest have been in court during the year. A final decision upholding the Weizmann butyl alcohol patents has been rendered and the du Pont-Sylvania cellophane litigation has been compromised by du Pont licensing on a royalty basis. The low viscosity lacquer suit has been through three trials, the last two in the Circuit Court upholding Flaherty's patent claims, but appeal will doubtless be made. The Muscle Shoals law provides that the Government may work under any patent applicable to the synthesis of nitrogen and/or any other process or products they may decide to use. This raises a disconcerting thought. The original patent law is permissive, not mandatory, upon Congress and the radical suggestion is being made that in any matter of public interest or public service, which might well include army or navy, sanitation—such as sewage disposal, or any process which the Government (as at Muscle Shoals) might choose to operate, what would virtually amount to abrogation of patentee rights should be effected for the public good. A very careful overhauling of our whole patent system—both the law and the service—is overdue, but there is not as yet a crystallized proposal capable of winning sufficient support from the conflicting interests to force this issue.

The chemical industry in the United States is in a comparatively strong position today. Sales and earnings of the second half of the year have both been better, and the pleasant, tangible evidence of this is increased or extra dividends declared by du Pont, Monsanto, and Hercules. The whole industry has weathered the economic storm more safely than many others, and on every hand we have evidence that the extension of chemical raw materials, and chemical processes, will continue at an accelerated pace once the economic clouds roll by.

Chemical Industry in Germany Reacts to Politics and Research

By Prof. Walter Roth

THE political changes in Germany in 1933 are known. The state[1] and the permanent structure planned for it comprise all circles and callings. The large technical associations, The Association of German Engineers, the Society of German Iron Workers, the German Society of Metal-Workers and Miners, the German Society of Contractors, the German Society for Metallurgy, the Shipbuilders Association, the Automobile and Aviation Society, the Standards Committee, the German Society for Testing Technical Materials, the German Society for Technical School Matters, and others have all been brought together into an "Organization for Technical and Scientific Work", abbreviated in Germany to the "R T A". This national Society aims at "attention to the mutual interdependence of the technical and scientific fields, representation of technical activity at home and abroad, propaganda relating to the significance of technology in the life of the people, orienting the technologist and engineer in the new state, providing means for advancing technical research and enhancing its value, establishing a live contact between research work and practice, and preparing reports on results along these lines." The Society also aims at "the formulation of instructions, directions, rules etc., such that the practical man can put them into daily use, and the settlement of all questions pertinent to the building up of this professional work and the co-operation of engineers and technical workers." The Association of German Engineers has placed its news organization at the disposal of the Society. Since January 1st this publication appears as the "R T A News". It is sent to about 50,000 members who have been drawn together into the National Society. The National Society works as an independent unit in co-operation with the German technical societies and other organizations.

The chemical societies have not as yet annexed themselves to the National Society. They exist as independent organizations and have been organized into the social structure as such. The Society for the Support of the Interests of the Chemical Industry in Germany publishes, as previously, the periodical "Die Chemische Industrie", besides its news edition. It also has a special monthly edition which is sent to all members of the chemical societies. The whole question of societies and associations is not yet settled. Everywhere is found the "principle of leadership". The responsible direction of the societies is no longer, as before, in the hands of an executive committee composed of several members. The chairman, chosen in general assembly or otherwise, appoints members of committees. As with the main society, the same condition holds in the individual and local groups. An effort is being made to reduce the excessive number of societies by combinations of similar groups. As a result, the Society of Independent Public Chemists of Germany united with the Society of Consulting Engineers and the Alliance of German Civil Engineers.

All of these efforts are directed toward giving technology in Germany a suitable place, and in interesting the technologist in the state more than formerly. The German Technocratic Society, which differs from American "technocracy" on many points, seeks to intensify the ethics of technology, and to study the criticisms made of late. In answer to the cry that machines have robbed men of work and bread, J. W. Wedding, of Essen, replied in an article appearing in "House of Technology" that in those years in which the greatest number of machines were in operation, and especially when much new machinery was introduced, unemployment was least. Thus in 1913, with an investment in Germany in machinery of 2.2 milliard R. M. about 500,000 were unemployed. In 1932 the investment in machinery was only ½ milliard R. M. but about 5.5 million people were unemployed. If Germany can offer the best and cheapest wares, it is only with the aid of highly perfected machinery and a rational organization of work. Export is of the utmost importance for Germany, especially for its chemical industry since about

1. By a cabinet resolution passed December 1st, 1933, the National Socialist German Workers' Party was made a public corporation and absorbed by the state.

3.2 million men are involved. According to recent acts of the Ambassador Werner Daitz, representing the National Socialist Workers' Party abroad, the economic attitude of national socialism is not rigidly dogmatic, but dynamic. Thus their so-called autocratic efforts must be understood as not being hostile to exports, but as an attempt to regulate and supervise them. Recently Professor Karl Bosch, representing the head of the I. G. dye industry discussed the methods of regulation in an article appearing under the heading "Where there is a will, there is a way." The object is to organize affairs in such a way as to reduce unemployment and relieve the people of oppressive taxation.

German Export of Chemicals

The export of chemicals during the first half of 1933 was maintained fairly well in comparison with total exportation from Germany. While total German exports from January to June of 1933 were 20 per cent. lower than in the same period of the previous year, the export of chemicals was only 9.75 per cent. lower. During the period following, the latter figure changed to 14.3 per cent. The value of chemical exports expressed in terms of millions of R. M. were as follows:

	First Half 1931	*First Half 1932*	*First Half 1933*	*Third Quarter 1933*
Total	509.6	377.5	340.9	168.9
Heavy chemicals	106.6	88.0	84.1	42.0
Wood charcoal products	7.4	4.6	4.2	1.7
Nitrogen fertilizer	82.4	45.2	27.1	11.5
Phosphate fertilizer	3.2	1.5	0.9	1.0
Coal-tar dyes and intermed.	88.9	68.9	66.6	33.9
Mineral dyes and pigments	41.5	30.7	28.5	14.7
Varnish, lacquer and putty	8.6	5.8	5.6	2.9
Explosives, ammunition, detonants	8.4	6.6	5.5	3.4
Pharmaceutical products	63.2	52.1	53.5	26.1
Ethereal oils and synthetic perfumes	8.1	6.4	5.1	2.6
Cosmetic products	5.3	3.3	2.9	1.8
Glue and gelatine	7.2	5.1	4.5	2.2
Tanning materials	1.9	1.1	1.1	0.5
Purified minerals	21.0	14.2	14.0	6.4
Photochemical products	20.9	18.9	13.1	6.8
Other chemical products	35.0	25.1	24.1	12.5

A revival of over-seas trade for both total and chemical exports, is beginning. The Latin-American nations show an increased receptivity to German chemical products, as do also Eastern countries such as China, The Philippines, Australia, Egypt and the Near-East. German exports to British India, Japan and the United States have decreased. Great Britain again furnishes the largest market for German chemical products in 1933. Holland was as high as Great Britain and France in 1932. In the year previous France was at the top of the list. German chemical exports to individual countries in terms of millions of R. M. and in per cent. are given in Table I.

In Table II are given export data on chemical products by the individual countries. The figures are in terms of millions of R. M. and in percentage.

TABLE I

German Chemical Exports to Individual Countries

	1931		*1932*		*First half of 1933*	
	Marks in millions	%	*Marks in millions*	%	*Marks in millions*	%
World	998.4	...	726.0	...	340.8	...
Europe as a whole	612.1	61.3	469.8	64.7	210.9	61.8
Great Britain	82.3	8.2	46.3	6.4	21.9	6.4
France	39.1	3.9	46.3	6.4	16.5	4.8
Belgium-Luxemburg	39.9	4.0	25.4	3.5	13.5	4.0
Netherlands	66.6	6.7	46.5	6.4	20.2	5.9
Switzerland	44.9	4.5	36.7	5.1	18.1	5.3
Italy	34.7	3.5	26.7	3.7	13.7	4.0
Spain and Portugal	29.6	2.9	31.0	4.2	13.8	4.0
Austria	30.5	3.0	24.1	3.3	10.2	3.0
Czecho-Slovakia	48.1	4.8	39.1	5.4	13.6	4.0
Hungary	13.9	1.4	11.1	1.5	6.5	1.9
Jugoslavia	8.3	0.8	6.6	0.9	3.8	1.1
Rumania	11.2	1.1	12.0	1.7	7.0	2.0
Bulgaria	3.1	0.3	3.6	0.5	1.4	0.4
Greece	6.2	0.6	3.1	0.4	1.3	0.4
The North Lands	87.4	8.8	70.4	6.7	29.7	8.7
The Border States	18.7	1.9	14.4	2.0	6.8	2.0
Russia	23.8	2.4	8.1	1.1	2.8	0.8
Poland	14.7	1.5	11.6	1.6	6.0	1.8
Danzig	2.7	0.3	1.8	0.2	1.2	0.4
Saar Region	5.7	0.6	4.4	0.6	2.4	0.7
Over-seas, total	386.3	38.7	256.2	35.3	129.9	38.1
United States	71.2	7.1	42.0	5.8	21.2	0.2
Canada	8.7	0.9	7.2	1.0	3.5	1.0
Latin America	56.6	5.6	48.3	6.8	31.1	9.1
China	61.9	6.2	32.2	4.4	17.8	5.2
Japan	60.8	6.1	34.3	4.7	14.8	4.3
British India	42.0	4.2	32.0	4.4	11.4	3.3
Dutch India	19.6	2.0	10.5	1.5	5.1	1.5
Africa	16.4	1.6	12.1	1.7	6.2	1.8
Australia	7.5	0.8	5.0	0.7	3.2	1.0

TABLE II

Export of Chemical Products by Countries

	1930		*1931*		*1932*	
	Marks in millions	%	*Marks in millions*	%	*Marks in millions*	%
Germany	1180	26.1	998	27.7	726	28.2
United States	626	13.8	496	13.8	358	13.9
Great Britain	598	13.2	444	12.3	355	13.8
France	485	10.7	386	10.7	291	11.3
Netherlands	172	3.8	158	4.4	128	5.0
Belgium	149	3.3	161	4.5	121	4.7
Italy	199	4.4	164	4.6	117	4.5
Switzerland	161	3.6	155	4.3	114	4.4
Canada	82	1.8	64	1.8	58	2.2
Japan	70	1.5	52	1.4	43	1.7
Norway	82	1.8	55	1.5	45	1.7
Sweden	68	1.5	54	1.5	32	1.2
Czecho-Slovakia	75	1.7	48	1.3	36	1.4
Chile	315	7.0	188	5.2	37	1.4
Argentina	60	1.3	46	1.3	28	1.1
Russia	40	0.9	32	0.9	23	0.9
Austria	40	0.9	30	0.8	18	0.7
Poland	30	0.7	20	0.6	14	0.5
Jugoslavia	22	0.5	19	0.5	10	0.4
Spain	45	1.0	15	0.4	12	0.5
Denmark	9	0.2	8	0.2	8	0.3
Hungary	10	0.2	7	0.2	3	0.1
Greece	5	0.1	3	0.1	2	0.1
Total	4523	100.0	3603	100.0	2579	100.0

Heavy chemicals comprise more than one-fifth of the world export of chemical products. The market for these has held fairly well, since in 1932 there was a decline of only 19 per cent. Export of fertilizers in 1932 was only half that of 1931; in 1929 they formed 21.7 per cent. of all chemical exports, but they have fallen to 12 per cent. The world export of coal-tar dyes increased from 6.6 per cent. of the whole in 1929 to 9.5 per cent. in 1932; similarly medicinals increased from 8.6 to 11.2 per cent. Mineral dyes and pigments constitute about 9 per cent. of the world market. Artificial silk is also about 9 per cent.

Part of Foreign Countries in German Chemical Industry

According to the data of the national statistical board, there were in Germany on December 31, 1932, 9,634 joint-stock companies with a nominal capitalization of 22,964 million R. M. In the chemical industry there were 464 joint-stock companies with a nominal capitalization of 1925 million R. M. At best 7 per cent. of this corporation capital of the various German industries exists in property abroad. In the chemical industries this amounts to 14 per cent. Investments in foreign countries are relatively unimportant. The corporate German capital invested abroad is divided as follows:

	R. M. in millions
United States	88
Belgium	58
Netherlands	47
Great Britain	44
Sweden	10
Switzerland	6
Czecho-Slovakia	1
Italy	1
France	0.4

The formation of syndicates is especially noticeable in the chemical industry. According to the national statistical board only about 10 per cent. of corporate capital invested in German chemical industries is outside of the large combines. The tendency of the latter is to absorb the smaller undertakings.

Cartels and Consolidations

In previous years the large number of companies combining has been noteworthy. Cartels often precede large consolidations. The development of an economic program by the state has led to the formulation of regulations governing cartels. The object is to prevent too sharp competition, to compel a reasonable price policy, and to bring about greater efficiency with relation to capacity. Most companies comply willingly, a few by force. The new regulations for cartels provide for investigation of prices by the state, so that excessive increases in price are prevented. Apropos of this, the Lithoponekontor G. m. b. H. is closed until December 31, 1937, in order to give outside companies an opportunity to get started. The smaller dye plants have been united with the Kalichemie A. G. The building industry (cement, white and colored pigments, stoneware, bricks, limestone), was the first to adopt a new working plan and consult with previous competitors. The result led in part to increased prices. In spite of the very difficult relations in the glass industry, the National Association for Hollow Glass Manufacture has been formed from the groups making light-bulbs, preserve jars, glassware for drink ing purposes, lead glass, and pressed glass. A bottle-making syndicate has been formed. A Union of German Window-Glass factories has been newly organized. The Cellulose Syndicate has been strengthened and enlarged by bringing in the outsiders. A committee of-the-whole of experts in the paper industry has been formed. The National Association of Composition Roofing Manufacturers has formed a cartel. Price lists and agreements, for example, as to the improvement of artificial silk, have been introduced in the textile industry. Price conventions have been agreed on for hide and bone glue, and for the hemp and cord industries. A national association of companies in the photographic industry has been formed, chiefly for purposes of export. Particularly numerous are the changes in the metal industries. The proposed incandescent-lamp cartel is of great interest.

Particularly worthy of mention is the powerful mining syndicate which bears the name Vereinigte Stahlwerke A. G. with a total capital of 560 million R. M. This company was formed from Vereinigten Stahlwerken, the Gelsenkirchner Bergwerks A. G., the Phonix A. G. fur Bergbau und Huttenbetrieb and the Vereinigten Stahlwerke van der Zypen and Wissener Eisenhutten A. G. The individual companies of the Vereinigte Stahlwerke A. G. have in part assumed the old firm names used under the Rheinisch-Westfalischen Schwerindustrie, but the names no longer represent the same firms as before. Of note in connection with the expansion of chemical firms is the taking over of a majority of the stock of the Degea A. G. (Welsbach Company) Berlin, by the Deutsche Gold und Silberscheideanstalt vorm. Roessler, Frankfurt a/m. For several years the Frankfurt firm had maintained business relations of one sort or another with the Welsbach company. In the last few years it had carried out an extensive program of expansion. The wood charcoal industries have been brought together by the participation of the Frankfurt Company in the Russfabrik August Wegelin A. G. in Kalscheuren near Cologne, and by their acquiring a majority of stock in the Chemisch-Pharmasentischen A. G., Bad Nomburg.

The significance of new developments in chemistry cannot be dealt with adequately in a few paragraphs. Many factors are involved, such as competitive relationships in the same field, problems of finance, raw materials, overcoming difficulties involving equipment, etc. A successful laboratory experiment may not work when put into small- or large-scale operation, but may have to be changed many times. About

4000-5000 chemical patents are applied for in Germany during a year, and about 2,000 granted. Only a fraction of these have any great influence. Examples are nitrogen-fixation, the contact process for sulfuric acid, and acetic acid synthesis. Among the new discoveries and methods mentioned in the journal "Die Chemische Industrie" *5*, 78-9 (1933), the following are of note:

1. Preparation of caustic soda without the corrosive action of chlorine, by the Kifln-process, in which caustic soda is prepared in a closed system with the aid of sodium fluosilicate. No chlorine is liberated. Only 4.94 cubic meters of water need be evaporated in the Kifln method, as against 6.41 cubic meters in the causticizing of soda.

2. Preparation of sulfur from coal gas. Because of the great paucity of sulfur in Germany, the potassium ferricyanide method for obtaining sulfur from coal gas is of great significance. In the Hamburg gas works 1,200 cubic meters of water gas are purified daily. The cost of purification amounts to two-thirds of that of the old dry method. The product is 99% sulfur. It is obtained in the form of very fine dust. In the large west-Germany coke district, the sulfur has been removed from the gas to a large extent by the use of a ferric hydroxide suspension. Methods have been built up for obtaining the sulfur from gas in the form of thiosulfate solutions, then converting these to sulfate or mixed fertilizer.

Other developments worthy of note in the chemical field are the direct synthesis of highly concentrated nitric acid by absorption under pressure and cooling, of the nitric oxide obtained in the combustion of ammonia. Still others are the preparation of stable bleaching powder according to D. R. P. 558,746, of contact agents for gas absorption, the use of condensed methane for motive power, wood distillation, viscose filaments containing gas bubbles, the preparation of nitrocellulose according to D. R. P. 551,007, the preparation of anhydrous methyl cellulose and xylose, the paint vehicle Tornesite (D. P. R. 535,054), the use of polyhalogens (e. g. naphthalenetetra-chloride, perchlor pentane) in combinations with organic carriers as solders, etc. Discussion of the new wood saccharification methods continues. At the last meeting of the society of German Chemists inWurzburg, papers were given by B. Rassow on the Scholler-Tornesche methods, by F. Honcamp and by Bergius. A new method for wood saccharification with hydrofluoric acid has been devised by K. Fredenhagen and G. Cardenbach. The economy of these methods for Germany is still doubted, e. g. by Classen. Also worthy of mention is the proposal of the engineer W. Halbich, of the experimental laboratory at the mining academy at Freiberg in Saxony, to use the fatty alcohol sulfonates now used as an aid in the textile industry, for the flotation of barite, e. g. Ultinal H C put out by H. Th. Bohme, Chemnitz.

Among other important events of the past year is the formation of the German Company for Petroleum Research. Considerable progress has recently been made in this field. One is also reminded of the numerous anniversaries of famous chemists, such as the ninetieth birthday on April 13th of the father of electroanalysis, Professor Alexander Classen in Aachen, the ninetieth birthday on August 1st of Dr. Leo Gans, founder of the coal-tar dye plant of Cassella in Frankfurt a/m; the eightieth birthday on February 9th of the leader in the explosive industry in Germany, Dr. Gustav Aufschlager, Hamburg; the seventieth birthday (May 13th) of Robert Vorlander, for many years general director of Heyden's chemical plant; the seventieth birthday (July 14th) of the chief representative of German chemical learning, Professor Walden in Rostock. Mr. Duisberg and A. von Weinberg on September 29th and October 1st respectively, celebrated the completion of 50 years of productive service to the chemical industry in Germany. Professor Haber, who retired as director of the Kaiser-Wilhelm Institute für Physikalische Chemie und Elecktrochemie on October 1st, celebrated his sixty-fifth birthday December 9th. For this year many conventions are planned, as well as a large exhibition of chemical apparatus (Achema VII) in Cologne. Of especial interest is the Ninth International Congress for Pure and Applied Chemistry, to be held in Madrid April 5-11th, since this is the first world assemblage of chemists since the war.

World Manganese Supplies

The recovery in the production of steel again raises the question of supplies of manganese, for fully 80 to 90 per cent. of the manganese output is consumed in the steel industry. Competition for supplies has always been a matter of some keenness, for very few—if any—of the world's steel producing centres have direct access to deposits of manganese ore. In 1913, Russia produced over 50 per cent. of the world supply, while British India accounted for another 40 per cent. When the revolution broke out in Russia, India assumed increasing importance, but by 1925 Russia again took the lead.

At the present time the steel industry in Great Britain is utilizing Empire supplies, chiefly from the Gold Coast, where high grade ores were discovered as far back as 1914. Other rich deposits are available in West Criqualand and in Egypt. French interests are centered in the development of mines in French Morocco; the United States has fostered manganese mining in Brazil and in Cuba. Germany, Belgium and Luxemburg have been compelled to draw very heavily on supplies from Soviet Russia, in the absence of sources which are in a more advantageous situation. At the same time Russia is obtaining an increasing share of the United States imports, and with the recent re-establishment of diplomatic relations between these two countries there is every prospect of a notable increase in the business of supplying manganese. Last summer Canada also placed large orders for manganese from Russia, and in the circumstances that these supplies had been satisfactory further large orders are anticipated.

The principal Russian manganese deposits are at Tchiaturi, on the South Western slopes of the Caucasus, and at Nikopol, on the lower Dnieper. The former are in the hands of the Tchiaturi Trust and are estimated to be 75,000,000 tons. The Nikopol deposits are slightly smaller and are worked by the Ruda Trust.—*The Chemical Age.*

British Chemical Industry Stabilizes in 1933

By M. D. Curwen, B. Sc.

COMPARED with what is happening in many other parts of the world, there seems to be in Great Britain an inherent type of stability that has resulted in few economic and financial disturbances. This is written in no "little Englander" spirit and was especially confirmed in the year 1933 when the outer world to the average Briton appears to be in a state of comparative financial, economic and social chaos. Not that the average Englishman is blind to the fact that there are many black spots in his own country, nor is he now insensible to the fact that what is now happening in the United States or Germany or even more distant Russia may affect him vitally. But, without doubt, things are this year more hopeful than last. From the financial point of view, England is fortunate and is the only country on a three per cent. basis. There are 600,000 more persons in employment than there were a year ago and the total unemployment is down now to about 2,000,000. In the great cotton trade a year or so ago there were over 200,000 unemployed. Today unemployment is about 107,000, suitable agreements over cotton have been made with India and negotiations are being made with Japan, who is our greatest competitor. The steel and iron industry is improving, many furnaces have been re-started and some Sheffield steel mills are working at full capacity.

Shipping, however, is still in a very bad way and the building trades are depressed. But the bright patches are more numerous than the dark.

The chemical industry itself is rather of the same composition. Looking at the import and export figures given opposite there appears to have been little change compared with 1932.

In commenting upon these figures one may note that the balance of trade between exports and imports is still well on the credit side, and if other industries showed as good, conditions would be eminently satisfactory.

Ammonium sulfate is again considerably down, due to the universal depression in agriculture and the figures given would have been worse still had it not been for the better average price (£5.9 per ton in 1933 against an average of £4.8 in 1932). For the same period as given in the tables the quantities exported were 367,700 tons in 1932 and 274,500 tons in 1931. Copper sulfate has felt the blow of the depression, mainly we presume because of the hard hit wine industry of Europe. Glycerine is continuing to recover, confirmation being obtained from several soap manufacturers who are now recovering glycerine instead of throwing it to waste. Dyestuffs, although

Imports in Pounds Sterling for 10 Months Ending Oct. 31st

Commodity	*1932*	*1933*	*Increase or Decrease*
Acetic Acid and Anhydride	273,400	239,100	— 34,300
Tartaric Acid	55,900	84,500	+ 28,600
Borax	79,700	54,700	— 25,000
Carbide	406,300	363,900	— 42,400
Red Lead	26,800	15,300	— 11,500
Potassium Compounds	1,040,200	986,600	— 53,600
Sodium Compounds	255,900	251,300	— 4,600
Coal-tar Dyestuffs	809,800	848,800	+ 39,000
Extracts for Dyeing	100,600	113,700	+ 13,100
Extracts for Tanning	659,800	599,000	— 60,800
Drugs, Medicines, etc.	1,006,000	1,232,500	+226,500
Paints	1,037,600	1,040,600	+ 3,000
Total*	7,979,100	7,984,000	+ 5,100

Exports in Pounds Sterling for 10 Months Ending Oct. 31st

Commodity	*1932*	*1933*	*Increase or Decrease*
Sulfuric Acid	28,100	26,900	— 1,200
Tartaric Acid and Salts	38,200	31,200	— 7,000
Ammonium Sulfate	1,774,600	1,623,900	—150,700
Bleaching Powder	146,000	142,100	— 3,900
Coal-tar Products	589,300	540,400	— 48,900
Copper Sulfate	738,500	542,200	—196,300
Disinfectants	629,300	674,800	+ 45,500
Glycerine	256,300	309,100	+ 52,800
Potassium Compounds	133,500	138,300	+ 4,800
Sodium Compounds	2,704,300	2,609,800	— 94,500
Dyes	977,600	962,100	— 15,500
Painters' Colors	1,831,000	1,955,800	+124,800
Drugs, Medicines, etc.	2,167,900	2,160,200	— 7,700
Total*	14,469,700	14,451,500	— 18,200

*It will be obvious that certain chemicals included in the totals have not been shown in detail and consequently the totals do not correspond to the sums of the detailed figures.

suffering a slight setback, are still in a strong position. In passing we may note that the Dyestuffs Import (Regulation) Bill is to continue for another year. The best showing is that made by painters' colors which in 1932 dropped over eight per cent. in exports, but has now completely recovered that loss.

The Ottawa Agreement

The effect of the Ottawa Agreement, the details of which were issued just a year ago, are of considerable interest to all readers in Great Britain and also to those in Canada and the United States of America. Actually it is far too early to make comparisons and we shall probably have to wait two or three years before we can view the figures in their proper perspective, for the depression abroad has continued and in some cases become worse and the fluctuating exchange owing to the American crisis has not made things easier for British traders. The figures we do give are nevertheless interesting.

With regard to Canada, it was hoped that Great Britain would get a better chance of competing for the $25,000,000 trade (1929) of which we only get 14 per cent. The U. S. A. gets most of the remainder. Two difficulties have operated in regard to Canada:

(1) The problem of Empire content: Canada raised her Empire content figure from 25 per cent. to 50 per cent. but made no provision for goods made from raw materials not found in the Empire and of which the raw material itself costs more than 50 per cent., e. g. mercury salts. A number of the Ottawa concessions could only operate if the Empire content was adjusted to a figure of 25 per cent. as otherwise they did not comply with the conditions of British preference, even if made entirely in the United Kingdom and therefore had to pay the higher or foreign duty. The Canadians have promised to adjust this for a large number of chemical products but have not yet done so.

(2) Non-issue by the Canadian Government of the list of chemicals made in Canada: This list is very important because the Ottawa Agreement gave us free entry for all chemicals and drugs not made in Canada with a duty of 25 per cent. against the foreigner, whereas the duty remains at 15 per cent. where the product is made in Canada. Lack of certainty as to which products are made in Canada has been a bar to trade and the list has not yet been issued although promised months ago.

In spite of these difficulties, the statistics given below for a quarter before the Ottawa Agreement and a quarter after the Agreement, look comforting. Again the reader must be warned that the same conditions existing in June, 1933, no longer hold. By the end of June the depreciation of the dollar had commenced and even with the dollar at 4.20 and 4.30 orders which had been given to the United Kingdom were beginning to go back to the United States of America. The continued decline in value of the dollar has obviously more than counterbalanced the Agreement. However, the figures given below give some indication of what might happen under better conditions of exchange.

In many items our trade has increased in absolute value, while in many others our share has increased though the value may have decreased. In a few instances our share has dropped. As will be seen our share increased from 16.4 per cent. to 22.8 per cent. while the U. S. A. trade decreased from 69.8 per cent. to 58.6 per cent.

Three Months Ending June

	1932		*1933*	
	Value in Dollars	*Per cent. of Total*	*Value in Dollars*	*Per cent. of Total*
United Kingdom Share	1,229,346	16.4	1,300,425	22.8
United States of America Share	4,571,703	69.8	3,343,566	58.6
Total Imports	7,496,310		5,703,179	

With regard to Australia detailed tariff adjustments were not worked out, but an important scale of preference was secured for most classes of British goods, the maximum preference being 15 per cent. The Australian Tariff Board has only lately got to work and it was only in November, 1933, that any reductions were made. In the quarter ending 1932 the total value of imports of drugs and chemical fertilizers was £775,471 of which the United Kingdom provided £318,981. In the quarter ending June, 1933, the total was £814,884 of which the United Kingdom provided £347,748. The figures for the whole of the chemical field are not yet available.

India, at the Ottawa meeting, granted a British preference of 10 per cent. to various classes of goods, among which were many chemicals. Several additions to this list have been made as a result of the decision of the Indian Government to discontinue the protection of its heavy chemical industry. No preference was given dyestuffs of which the imports are valued at over £1,000,000. Although it is understood that our trade has benefited appreciably, no actual figures are yet available to indicate what the benefit has been.

General Notes

The most exciting chemical news of the year is that foretold by the Hydrogenation of Coal Bill, which will be introduced in Parliament during the present session. This will give effect to the Government's pledge of a guaranteed preference of 4d. per gallon on petrol manufactured from coal, shale or peat. Already Imperial Chemical Industries, Ltd., have embarked on erecting a large commercial plant at Billingham, where it is hoped to produce 100,000 tons a year of high grade petrol. The 2½ millions sterling needed for the enterprise is being furnished by Imperial Chemical Industries. Orders for this scheme have been already placed with the English Steel Corporation and Messrs. Thos. Firth and John Brown for

alloy steel plant worth £250,000. It will also be interesting to watch the progress of the shale industry which the Bill affects and which has by no means been in a happy situation, especially since the price of ammonium sulfate, which this industry produces as a by-product, has dropped so severely. Other welcome information regarding home-produced fuel comes from Low Temperature Carbonization, Ltd. Fuel oil produced by carbonization of coal at low temperatures has been successfully used in steam raising on H. M. S. Westminster and a contract for twelve months' supply of this oil has been placed by the Admiralty. A similar contract has been placed by the Admiralty for aviation "petrol" made by the same firm, and refined by Messrs. Carless, Capel & Leonard. The Askern works of Low Temperature Carbonization have been extended by 50 per cent.

Although sulfuric acid no longer holds the position it did formerly as an index of trade it is still, of course, one of the most important chemicals produced. The following figures are of interest:

Production

July-December, 1932	354,600 tons
January-June, 1933	386,100 "
Year ending June, 1932	764,600 "
" " " 1933	740,700 "

From the last given yearly figures it will be seen that there has been a decrease of 23,000 tons or about three per cent. But it will also be seen that the January/June, 1933, figures show an increase over the previous six months, so some improvement is likely to be shown over the whole of 1933 when figures are available. The consumption of the acid has no doubt decreased because of the policy of liquor destruction now being applied at some coal carbonizing plants in preference to making ammonium sulfate at an unprofitable figure. According to the 69th Annual Report on Alkali, etc., Works, the numebr of works registered has decreased by 63 to 921 mainly due to decreases in works registered for the manufacture of ammonium sulfate.

The proportions of the January/June, 1933, make, produced from the various raw materials, are as follows:

		Tons Used
Pyrites and anhydrite	54.62%	162,800
Spent oxide	21.82%	60,700
Brimstone	13.05%	16,300
Zinc concentrates	10.51%	45,600

Seventy-one per cent. of the acid produced is made by the chamber process and 29 per cent. by the contact process. The latter process is gaining ground and more acid is being made from zinc concentrates and brimstone and less from pyrites and spent oxide, while American sulfur is gaining ground from the Sicilian variety. Other items of interest include the facts that Imperial Chemical Industries, Ltd., are making contact sulfuric acid from anhydrite and that Messrs. Fison, Packard & Prentice, Ltd., of Ipswich, have installed what is stated to be the most modern superphosphate works in the world with an output of over 1,000 tons of superphosphate per week. It is worked on the Oberphos principle and works in conjunction with the largest single Mills Packard unit for producing sulfuric acid in the world. The use of sulfuric acid for weed-killing has been launched in this country and Messrs. Spencer Chapman & Messel, the well-known acid makers, possess a fleet of tank-wagons fitted with sprayers and are carrying out this type of work under contract.

New Trend of Chemical Manufacture

In other directions chemical manufacture is taking up many interesting lines. Imperial Chemical Industries, Ltd., are now making chlorinated naphthalenes (synthetic waxes of great use in electrical fields), sodium aluminate for use in water-softening, sodium carbonate monohydrate by a new process and urea for synthetic resin manufacture.

Staveley Coal & Iron Co. have erected a Backmann plant for the production of bleaching, and since we have seen both this new plant and the old one which it replaced we can vouch for the improvement that has taken place. There are no chlorine leaks, as the plant is under suction, and no laborer enters the plant to empty or fill the chambers.

In conjunction with Messrs. B. Laporte, Ltd., National Titanium Pigments, Ltd., has recently opened a new works at Luton. The pigment is made from Ilmenite imported from India; the new works are a model of chemical engineering ingenuity and a credit to the directors and the suppliers of the plant who include the Dorr-Oliver Co. and Mining and Industrial Engineering.

An entirely new development is that which may place ammonium bicarbonate on the market as a fertilizer. Ammonium chloride using waste pickling liquors for the acid radicle has long been suggested, but this we believe is the first attempt to make the bicarbonate for agriculture. It is made directly from coke oven gas and is being tested at Rothamsted.

A modern steam raising plant has been built by Monsanto Chemical Works, Ltd., at Ruabon, and was inaugurated last September by H. R. H. Prince George. The generation of power is combined with production of process steam, steam being generated at 425 lbs. per sq. in., superheated to 725° F., and for process work is cooled to 450° F. with a pressure of 150 lbs. per sq. in.

There has been a considerable increase in the production of industrial alcohol, the latest figures, January-June, 1933, being 6,661,000 proof gallons, a 10 per cent. increase over the previous six months. The increase is due to the use of power alcohol, increased production in the fine chemical industry of esters, etc., for the lacquer and safety glass industries, and to the new use of duty free industrial alcohol in cheap perfumes.

The synthetic resin industry has progressed in a most phenomenal way and manifested itself to the discriminating public at a remarkably interesting exhibition at the Science Museum to which most of the large chemical works and molders gave their aid by gifts of samples of raw and finished materials. At the same time, a series of public lectures on plastics was given by a number of well-known chemists and other technologists. Altogether a huge success.

Two manufacturing companies have made interesting extensions. Imperial Chemical Industries, Ltd., who are reported to be making urea, have absorbed Croydon Mouldrite, Ltd., a step which indicates the wisdom of the parent company. British Cyanides, Ltd., the makers of urea and thio-urea resins, has entered the phenol-formaldehyde field and has acquired the well-known Pollopas patents. One of the most spectacular moves in the field of synthetic resins is one that has long been urged by "The Industrial Chemist", the manufacture in this country of chemical plant from synthetic resin. This is now being made by The Bushing Co., Ltd., of Hebburn-on-Tyne, which is controlled by The General Electric Co. The sole selling agent is the Kestner Evaporator & Engineering Co., whose aid in the design of such plant is so valuable, and who have produced a resin manufacturing plant known as the "Isolectric" heating plant by which oils can be directly heated electrically to temperatures as high as 650° F. with ease.

During the year the price of phenol rose considerably and for a short time there was a shortage of this material which, however, was quickly made up by the manufacturers. The cause of the shortage was due to the demand from abroad and because some of the raw material for its manufacture left the country.

It has been suggested, therefore, that the present conditions make it necessary for the installation of plants for the synthetic manufacture of phenol from benzine. The writer thinks that this is unnecessary and that the present manufacturers can take care of any threat of temporary shortage. In normal conditions shortage is most unlikely.

An interesting communication has been received by the writer from the Birmingham Guild, Ltd., the well-known architectural metal workers. The company is following with great interest the trend of synthetic resins in industry and is working in cooperation with a large chemical firm to find avenues of use for the material for artistic architectural constructions.

Artificial Silk

This year has been a bumper year from the point of view of production. September proved a record year with 8,100,000 lbs., while the total for the first nine months of 1933 totalled 60,000,000 lbs. against 54,000,000 lbs. for the same period in 1932 and 37,000,000 lbs. in 1931.

The sale by auction of the Branston Artificial Silk Co. was cancelled, the company's debt to the Alliance Assurance Co. having been paid by the sale of a number of Kirklees shares. The Alliance Artificial Silk Co. have reduced their capital and have formed a subsidiary company, Crepe Yarns, Ltd.

British Celanese are now making transparent wrapping material.

Chemical Engineering Notes

The sulfuric acid industry has been stirred somewhat by the introduction of tellurium lead (containing about 0.07-0.1% tellurium) by Messrs. Goodlass Wall & Lead Industries, Ltd.

The technical press some six months ago gave a few preliminary details of the new constructional material, but until now none has been available of actual works practice. In view of the importance of lead in sulfuric acid manufacture and in other processes using sulfuric acid the writer takes the rather unusual step of quoting some extracts of letters the manufacturers have received from users.

(a) Tellurium lead more resistant to corrosion by sulfuric acid of 35 per cent. and 95 per cent. concentration by weight than ordinary chemical lead.

(b) Tellurium lead gave satisfactory resistance to strong sulfuric acid in presence of nitrous compounds at 308° C. Order placed for lining concentration pans at Gay Lussac tower.

(c) Tellurium lead coils in constant use for six months in phosphoric acid plant. In similar conditions ordinary chemical lead only lasts three months.

(d) Tellurium lead pipe used to conduct chamber acid to top of Gay Lussac tower, where ordinary chemical lead lasted for one month. Tellurium lead pipe still in use after three months and is still good. No repairs.

(e) Tellurium lead superior in resisting attack by 30/40 per cent. phosphoric acid at 105° C.

(f) Tellurium lead piping used very satisfactorily for chlorine gas. No appreciable loss in weight.

The manufacturers inform the writer that equipment has been homogeneously lined with tellurium lead, but no data has yet been received from the users.

Manufacturers of homogeneously lead lined equipment have increased in number. It seems strange that the homogeneous lining of steel with tin is not carried out to any great extent. It is being used in the form of tank wagons to convey milk and cream, but the practice is not widespread. Advantages for carrying foodstuffs are obvious, especially as such vessels can be cleaned bacteriologically with high pressure steam without affecting the tin coating.

The new nickel-clad steel announced by the Mond Nickel Co. is now being made in this country and the first piece of chemical equipment made from it was announced by W. J. Fraser & Co. of Dagenham, Essex, who have also introduced a new nickel-chromium alloy.

Messrs. Robert Jenkins & Co. of Rotherham have widened their scope of manufacture. In addition to the new drier announced last year and which has found favor in salt and sugar drying, this Company is now producing "glass-lined" vessels, having installed very large furnaces for the purpose, a new sulfuric acid evaporator, and have also taken over the manufacture and selling of the Barber jet, an interesting mixing device which has been described in the *Industrial Chemist.* It is hoped that certain chemical reactions involving the interaction between liquids and liquids and gases and gases can be carried out with this apparatus.

Messrs. Bennett Sons & Shears, Ltd., have now a license to build the famous Barbet plant for alcohol and ether manufacture and are also manufacturing a new type of rapid circulating evaporator. Messrs. Samuel Hodge & Sons have placed on the market the Waring Vacuum Filter, an ingenious equipment first invented for the filtration of a lead compound, but which has now found considerable scope in other fields. Messrs. Ashmore Benson & Pease, Ltd., have produced a new valve for the chemical and gas industries. It has a cast iron body and is lined with Linatex (rubber latex). A good deal of interest has been shown in the safety and package counting devices of the photo-electric type made by Messrs. British Thomson Houston. An ingenious carboy emptier which makes carboy emptying quite safe has been produced by Messrs. Albright & Wilson of Oldbury.

Japanese Sulfate Market

With the development of the domestic industry, the imports of sulfate of ammonia into Japan, which were at one time of considerable proportions, have fallen off in recent years. Manufacturers found during 1932 that it was more profitable to export this fertilizer than to dispose of their entire production in local markets, with the result that small quantities have been going to the United States, Hawaii, and the South Sea Islands, thus creating a shortage in the domestic market and a corresponding increase in price. This, combined with the establishment of a distribution guild by domestic manufacturers and the abolition of the import and export permit system, has caused current quotations to rise to approximately 88 yen per ton. On the other hand, the prices of such agricultural products as rice have not gone up. The position is, therefore, of some concern to the farming community, and the authorities have had under consideration a policy the object of which is to reduce the cost of production of rice by supplying cheap fertilizers. The plan involves the subsidization of the use of foreign fertilizer to the extent of 2,000,000 yen and a grant of 400,000 yen to the Japan Federation of Farmers' Purchasing Guilds.

According to the estimates of the Department of Agriculture, there was a shortage of approximately 200,000 tons of sulfate of ammonia this spring, and, even if the completion of several extensions to plants now under consideration actually takes place, next spring is likely to witness a shortage of about 100,000 tons. This shortage must be made up from imported fertilizer, so the Department of Agriculture authorities propose to allow a maximum sum of 20 yen per ton for 100,000 tons to those who buy imported sulfate of ammonia, in order to make good the difference between the import price and the domestic price, the former being estimated at 100 yen per ton, while it is anticipated that the domestic quotation may be stabilized somewhere around 80 yen per ton. The consumption next year is placed at about 1,000,000 tons. Of this amount 700,000 tons will be supplied by domestic producers, 200,000 tons obtained from an expected carry-over at the end of the year, and the balance, 100,000 tons, will be supplied as imports. A recent official trade report states that the authorities will cooperate with the Japan Federation of Farmers' Purchasing Guilds, as well as with several of the more influential import houses, to form a purchasing pool.—*The Fertiliser.*

The Industry's Bookshelf

Public Health Nursing In Industry, by Violet H. Hodgson, 249 p., published by The MacMillan Co., 60 5 ave., N. Y. City. $1.75.

The material in this book is well organized for easy reference, presents current practices and procedures that have been found successful in modern industrial nursing and lays special emphasis on the opportunities for health education in this field.

Probably is the 1st time that an effort has been made to present the industrial nurse's job from the point of view of its objectives, methods of arriving at these objectives and responsibilities and opportunities of the personnel involved in working toward such goals.

The Tax Racket, by Ray E. Untereiner, 162 p., published by J. B. Lippincott Co., Philadelphia, Pa. $1.00.

What part of our enormous Federal, State, and Local taxation is legitimate? What part is the most bare-faced of rackets? Is it the fault of greedy and incompetent politicians or is it the fault of the "people?" These and other pertinent questions are explained and answered in "The Tax Racket". The author searches out the reasons why American citizens are paying 4 times as much in taxes today as they paid in 1913, and why this staggering amount is apt to be increased unless something is done about it.

The Theory and Practice of Modern Taxation, by William Raymond Green, 266 p., published by Commerce Clearing House, Inc., 205 W. Monroe st., Chicago, Ill. $2.75.

A scholarly, authoritative and exhaustive study of the theory and practices of taxation from its many diversified angles here, in England and on the Continent. The special study of sales taxes is most illuminating.

The Chemical Formulary, by H. Bennett, 537 p., published by The Chemical Formulary Co., 950 3rd ave., Brooklyn, N. Y. $6.00.

An up-to-the-minute collection of practical formulae for making thousands of products in all fields of industry. This book is not merely a revision, but an entirely new effort and, therefore, contains no obsolete or antiquated material that is so often found in similar books.

Principles of Industrial Organization, by Dexter S. Kimball, 460 p., published by McGraw-Hill Book Co., 330 W. 42 st., N. Y. City. $4.00 (4th edition).

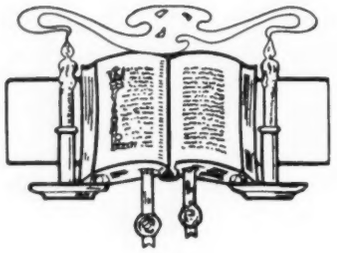
Presents concisely and soundly the whole scientific background of production and the methods and mechanisms of management that have been devised to control production. In this edition this widely-known pioneer work has been fully revised and contains new material on such subjects as measures of management, mechanization of industry, and factory arrangement and production control.

Stop That Smoke!, by Henry Obermeyer, 289 p., published by Harper & Brothers, 49 E. 33 st., N. Y. City. $2.50.

The late John E. Teeple once spoke about progress through injunction or some such words to that effect, conveying the idea that many of our outstanding technical achievements have come only after persistent "kicks" about industrial nuisances. Smoke is one of our worst offenders yet and the author presents an interesting non-technical, easily understandable survey of all angles that will prove valuable reading to a wide variety of men in industrial life.

Chemical Chronology

1933



January

Dr. Irving Langmuir, of G. E.'s House of Magic, receives Nobel Chemistry Prize from King Gustav at Stockholm ceremony. ¶ Chemical industry joins other manufacturing groups in hearings before the Tariff Commission and the House Ways and Means Committee seeking relief against wave of foreign goods being sold at ruinous prices. ¶ Cosach is taken over by Chilean Government. ¶ President-Elect Roosevelt visits Muscle Shoals with the veteran legislator, Senator George W. Norris. ¶ Standard Wholesale Phosphate & Acid replies to charges of domestic phosphate rock producers, denying importation of Russian material in unfair competition with U. S. sources of supply. ¶ Bell Telephone Labs. and Roxalin Flexible Lacquer report a perspiration-proof lacquer. ¶ Freeport Texas offers 25,000 shares of new 6% convertible preferred to finance new sulfur development. ¶ Du Pont reports '32 last quarter earnings of $1.82. ¶ Senator Hatfield forecasts "dumping" of Chilean nitrate in the U. S. ¶ Flaxseed farmers and crushers request higher differential between the duties on linseed oil and flaxseed. ¶ Deaths: Dr. Samuel A. Goldschmidt, 84, chairman of the board of Parsons Ammonia, and widely known in the chemical field; Guy H. Buchanan, 45, brilliant Cyanamid chief technologist.

February

Walter H. Aldridge, Texas Gulf Sulphur's president, receives Saunders Medal at annual dinner of the American Institute of Mining and Metallurgical Engineers. ¶ Dow Chemical coins 20c Dowmetal pieces when Michigan's governor declares banking moratorium. ¶ "Haveg" new synthetic resin lining for tanks, fittings, etc. (German development) is now being made at Newark, Del. ¶ Du Pont Cellophane sues Sylvania Industrial, alleging patent infringement. ¶ Proposal is made to legislate 10% alcohol (made from domestic grain) into all motor fuels as an aid to the farmer. ¶ Shannon Committee condemns government competition with private business. ¶ Edward J. Cornish is elected National Lead Board Chairman and Eugene L. Norton assumes similar post with Freeport Texas. ¶ Carbide's Curme, Jr., is '33 Chandler Medalist. ¶ Chemical stocks decline in a month of general price weakness. ¶ Mathieson reports '32 net of $729,505 against $1,394,107 in '31. ¶ Rustless Iron is winner in suit brought by Electro Metallurgical and American Stainless Steel, Judge Coleman ruling patents invalid. ¶ Mallinckrodt's president, Oscar L. Biebinger, celebrates golden wedding anniversary. ¶ Deaths: George P. Adamson, 68, former director of research, General Chemical; Dr. Alfred S. Burdick, 65, president, Abbott Laboratories; Joseph M. Huber, 74, president, J. M. Huber, Inc.

March

America reaches bottom of the depression when every bank is closed March 4 as the 1st order of President Roosevelt and the "New Deal". ¶ Harry L. Derby, Cyanamid, speaking before A.C.S., urges that American chemical structure should be better protected by tariffs against foreign competition resulting from depreciated currencies. In exclusive CHEMICAL MARKETS' interview he opposes administration's plan of wholesale agreements with foreign countries to bring about general lowering of various tariffs. ¶ Proponents of idea of legislating alcohol from grain into motor fuel turn to 2% absolute in place of 10% denatured. ¶ U. S. investors in Chilean nitrate bonds ask U. S. Government aid in protest against suspension of payments of the 60 peso per ton tax. ¶ Ellis-Foster and Unyte sue Synthetic Plastics (Cyanamid), alleging infringement of a number of patents of the urea-formaldehyde type. ¶ Muscle Shoals legislation is introduced into Congress. ¶ Du Pont starts synthetic camphor production. ¶ Commercial Solvents defeats Union Solvents before the Supreme Court in the famous Weizmann Patent litigation. ¶ Sharples Solvents' new Wyandotte, Mich., factory starts operations. ¶ Eighty-three year old Dr. Charles Edward Monroe only surviving charter member of the A. C. S. is guest of honor at dinner held in conjunction with the A. C. S. meeting at Washington. ¶ A. I. Ch. E. commemorates 25th anniversary with a volume "Typical Records of Research in Chemical Engineering Industries". ¶ H. H. Rosenthal, N. Y. City broker, is in Japan. ¶ Deaths: John Francis Queeny, 74, chairman, Monsanto, an outstanding American chemical industrialist.

April

International leaders in nitrogen production meet secretly in N. Y. City, 1st time such a gathering has ever been held in the U. S. ¶ Agitation for alcohol-gasoline blended fuel begins to wane as grain prices rise. ¶ Senator Norris' views on Muscle Shoals prevails over that of the more radical Representative McSwain. ¶ Chile announces proposed new reorganization plans for defunct Cosach. ¶ By taking out a license with du Pont, Sylvania Industrial brings to an end this important patent infringement litigation. ¶ And, in the U. S. District Court in N. Y. City, New Jersey Zinc is declared winner in its suit against James A. Singmaster and Tubize Chatillon. Latter agrees to purchase from the New Jersey Zinc Co. rights on patents for delustering of artificial silk by means of pigments. ¶ Harvard selects James Bryant Conant as president. ¶ Monsanto springs year's merger surprise by acquiring Swann. ¶ Merck dedicates new $200,000 research laboratory. ¶ Allied Chemical's annual stockholders' meeting is turned into a lively affair when group attacks incompleteness of annual financial statements. Item-marketable securities—is specifically attacked as misleading. ¶ Chemical company stocks rise in a bull market. ¶ Electro Metallurgical and American Stainless Steel file notice of appeal from Baltimore decision favoring Rustless Iron. ¶ Dr. J. V. N. Dorr (president, A. I. Ch. E.) sees potential demand for 2,000 chemical engineering graduates a year. ¶ Deaths: Arthur M. Comey, 71, retired du Pont chemist, and explosive authority.

May

Industry begins to feel the "New Deal" as the Industrial Control Bill is introduced in Congress. ¶ Manufacturing Chemists' Association plans annual meeting at Shawnee, and will discuss provisions of the bill. ¶ Columbia's Sherman receives American Institute of Chemists' Medal. ¶ President Roosevelt signs Norris measure creating Tennessee Valley Authority to develop Muscle Shoals. ¶ Du Pont forms R. & H. Chemicals Department and places Dr. E. A. Rykenboer in charge. ¶ Tonnages begin to show definite signs of improvement. ¶ Carbon Black Export Association is formed by leading producers. ¶ Mallinckrodt, Merck, Carbide, Victor and other outstanding companies open exhibits at Chicago's Century of Progress. ¶ First real "bull" market in 4 years carries stocks to new high levels. ¶ N. Y. Stock Exchange officials deliver ultimatum to Allied management over dispute with group of stockholders protesting inadequacy of annual financial statements. ¶ Monsanto changes official name to Monsanto Chemical Co. ¶ Our abandonment of the gold standard in April causes several important price rises, particularly those items largely imported. ¶ Hercules Powder celebrates 20th anniversary. ¶ J. Davison Pratt, general manager, Association of British Chemical Manufacturers, arrives in this country. ¶ Deaths: Ernest Hopkinson, 60, chairman, Naugatuck Chemical, and vice-president, U. S. Rubber; Arthur Orr, 48, former Commercial Solvents' vice-president.

June

Chemical industry and allied groups find it difficult to comply with the provisions of the Industrial Control Act and a great amount of confusion exists. ¶ Cyanamid appoints G. M. J. Mackay, formerly of G. E., as director of research. ¶ Heavy chemical manufacturers enjoy largest tonnage so far as prices generally begin to rise. ¶ Charles H. MacDowell comes out of retirement to help fertilizer industry code work. He takes over part of Secretary Brand's N. F. A. duties while the latter devotes part of his energies to the new A.A.A. ¶ Pierre S. du Pont is asked to join General Hugh S. Johnson's NRA advisory board. ¶ Precipitous drop in purchasing value of the dollar as expressed in foreign currencies following the collapse of the London Economic Conference forces prices of raw commodities to much higher levels and spurs purchasing. ¶ Commercial Solvents purchases Rossville's industrial alcohol business. ¶ Code for the fertilizer industry is the magnet which attracts a record crowd to the N. F. A. convention. ¶ Freeport Texas announces that new sulfur development at Grande Ecaille in Louisiana will be in production by the end of the year. ¶ Controversy over Allied's financial statements ends in a satisfactory compromise. ¶ Bureau of Prohibition is ordered merged into the Bureau of Investigation of the Justice Dept., and the Bureau of Industrial Alcohol is left in the Treasury Dept. ¶ Deaths: Albert L. Opper, 48, vice-president, American Commercial Alcohol.

July

Stanco (a Standard of N. J. subsidiary) sets off a bombshell in the anti-freeze business with announcement that it will market 3,000,000 gallons of a mixture of 65% isopropyl and 35% methyl alcohol, both, of course, produced synthetically. ¶ U. S. Circuit Court of Appeals reverses decision of District Court in which Glidden was declared victor over du Pont in so-called Flaherty lacquer patent suit. Glidden immediately files for a rehearing. ¶ Christian Breevort Zabriskie, for 50 years an outstanding character in the borax industry, resigns from Pacific Coast Borax, because of ill health. ¶ Imperial Chemical Industries announces plans for commercial plant for hydrogenation of coal. ¶ Calco Chemical purchases E. C. Klipstein. ¶ U. S. Tariff Commission's hearing results in no change in the tariff rate on camphor, the one U. S. producer, du Pont, showing that its production had exceeded 25% of the total consumption. ¶ U. S. I. introduces "Super Pyro" anti-freeze—a 200 proof anhydrous alcohol. ¶ After several months of sharp appreciation, chemical stocks join the general market in a severe decline. ¶ Sid Klein, well-known U. S. I. official, resigns to become a broker in whiskey warehouse receipts. ¶ Chemical industry revives wartime Chemical Alliance to form a basis for formulating a basic code with Cyanamid's William B. Bell as president. ¶ Intense summer heat wave is made much hotter as literally hundreds of various groups within the general chemical field struggle to write codes. ¶ New derivative of castor oil—butyl acetyl ricinolate—is placed on the market. It has special plasticizing properties. ¶ Deaths: W. Acheson Smith, 54, president, Acheson Graphite; George M. Lynn, 37, brilliant Columbia Alkali chief chemist.

August

Formal conference on Chemical Alliance Code with NRA officials brings to light several important fundamental differences of opinion, particularly on labor provisions. ¶ Our chemical foreign trade begins to show improvement. ¶ Hercules Powder announces an increase of 10% in salaries. ¶ Tennessee Valley Authority announces program of research for the purpose of eventually lowering fertilizer costs to the farmer by scientific improvements in methods of production. ¶ Southern Alkali announces plans to rush to completion its $10,000,000 Corpus Christie plant. ¶ Ethyl-Dow Chemical, with a plant at Kure Beach, N. C., is formed by Dow Chemical and Ethyl Gasoline to produce bromine commercially from sea-water. ¶ Third outstanding construction announcement of the month is that of Merrimac's (Monsanto subsidiary) entry into alcohol production with a plant capacity of 3,000,000 gallons. ¶ DuPont reports that it plans to gradually move Newport's Carrollville, Wis. plant to Deepwater, N. J. ¶ Lacquer Manufacturers' Association is formed by small and medium sized lacquer producers under leadership of Frank G. Breyer. ¶ French (African) and American phosphate rock producers are reported to have signed an agreement allocating international markets. ¶ Stock market gains in August erase July's losses. ¶ Chemical shipments are heavy and prices advance over a broad front. ¶ Manufacturers of chemical equipment form Chemical Engineering Equipment Institute and formulate a code. ¶ Cleveland Cliffs announces new patents on activated carbon. ¶ Zapon combines its western business with Brevolite Lacquer. ¶ Potash prices remain unannounced.

September

Chemical Markets becomes Chemical Industries. ¶ Public hearing on Chemical Alliance Code fails to settle fundamental differences of opinion over labor clauses. ¶ Distributers organize under American Oil & Supply's Burnett. ¶ A. C. S.' Chicago meeting has a registration of over 3,000 for 1st time in the history of the organization. ¶ U. S. Circuit Court of Appeals upholds decision of lower court in General Chemical's Slama-Wolf vanadium sulfuric catalyst suit against Selden, confirming earlier decree that the latter did not infringe. ¶ Francis P. Garvan is chosen as NRA industrial advisor to the chemical industry. ¶ Harry A. Curtis is selected to be TVA chemical engineer. ¶ Frederick W. White, completing 23 years as president of Mutual Chemical, resigns to take up less arduous duties of chairman of the board, and Dr. Herbert H. Kaufman becomes president. ¶ Smaller lacquer producers oppose paint code at public hearing. ¶ Fertilizer code hearing indicates

industry and NRA officials in close agreement over details. ¶ Charles J. Brand resigns position with A. A. A. and returns to N. F. A. ¶ West Coast superphosphate producer-Anaconda-protests alleged dumping of Japanese superphosphate. ¶ Stocks run into bad September squall and 9 leading chemical common stocks depreciate $128,228,866. ¶ September tonnages show a decline from the busy months of June, July and August. ¶ Joseph Turner & Co. opens a Providence office. ¶ H. L. Derby, Jr., becomes manager of Cyanamid's Chicago office.

October

Alliance and NRA officials continue deadlocked over controversal "Merit Clause" in the Code. ¶ J. V. N. Dorr is elected president of Chemical Engineering Equipment Institute at annual meeting. ¶ On last day of the month President Roosevelt signs paint and fertilizer codes. ¶ New Chemical Industry Medal offered by the Society of Chemical Industry (taking the place of the former Grasselli Medal) is awarded to Philadelphia Quartz's James G. Vail. ¶ Harry L. Derby accepts chairmanship of the chemical group of the Family Welfare Committee seeking $4,000,000 for N. Y. City's needy. ¶ Charles H. MacDowell retires from his N. F. A. work and plans world cruise. ¶ Dr. Lewis H. Marks resigns as secretary of the Industrial Alcohol Institute to head Continental Distilling, new Philadelphia whiskey producer with a new process for which, it is claimed, one day's ageing is amply sufficient. ¶ A. A. C.'s George A. Benington resigns to become a Mutual Chemical vice-president. ¶ American Cyanamid acquires Filtration Equipment. ¶ Alkali, chlorine, and bichromate contract prices are advanced. ¶ Virginia Carolina Chemical is torn in a factional strife for control. ¶ Third quarter earnings reflect better tonnages enjoyed by the majority of chemical companies. ¶ General business again shows further recession as uncertainty and anxiety over inflation grows. ¶ Gen. Herman A. Metz again heads chemical section of the United Hospital Fund. ¶ Harry E. Dunning is made American Commercial Alcohol sales manager. ¶ Deaths: William T. Elkinton, 73, chairman of the board, Philadelphia Quartz; Frederick Engstrom, 71, United Carbon chief chemist; John T. Enequist, 75, president, Seldner & Enequist; Harry Armand Stebbins, 57, Merck's assistant N. Y. City manager.

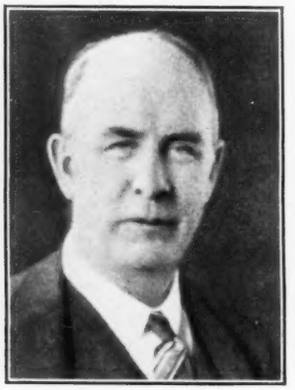
November

Fifth revision of the Chemical Alliance Code is placed in hands of members for approval. ¶ Chemical Foundation comes to financial aid of Dr. Herty's Savannah pine paper pulp experiment station, and 9 Georgia papers print successfully special editions on slash pine paper. ¶ Cyanamid acquires General Explosives. ¶ DuPont is declared victor over Glidden in rehearing in U. S. Circuit Court on the so-called lacquer patents. ¶ U. S. chemical foreign trade shows improvement in 1st 9 months over same period a year ago. ¶ Repeal finds most alcohol companies operating at capacity and contemplating or already erecting new plants. ¶ Mathieson startles alkali world by announcing new stock issue of about $7,000,000 for a plant to be erected at Lake Charles, La. ¶ Violent fluctuation of the dollar forces prices, particularly imported items, to much higher levels and quotations are largely nominal. ¶ Carbon black prices are placed on a delivered basis and raised about 1¼c. ¶ Atlanta convention of the N. F. A. attracts record crowd as plans are laid for carrying out code provisions. ¶ Ernest T. Trigg resigns as John Lucas head to direct newly formed National, Paint, Varnish and Lacquer Association—a combination of the 2 former national bodies. ¶ DuPont, Monsanto and others declare special extra dividends and several companies increase regular dividend rates. ¶ Stocks once more show a net appreciation after several months of decline. ¶ Business again improves moderately and business of signing contracts (with a special 6 months clause protecting against inflation) goes on at an encouraging pace. ¶ Dr. Herty is appointed deputy administrator, NRA, for the chemical industry. ¶ Finished paint prices advance. ¶ Sherwin-Williams' general production manager, C. S. Neal, is honored as a 25 year S.-W. man.

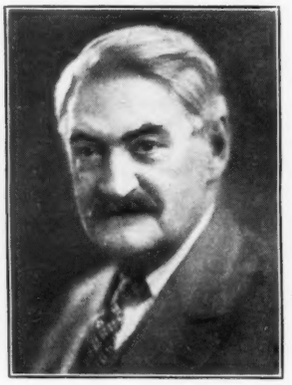
December

Glidden decides against opposing du Pont on lacquer patents any further and agrees to take out a license. ¶ Du Pont also arranges truce with Jones-Dabney and the latter too accepts licensing agreement. ¶ M. C. A. and other chemical groups fight stringent provisions of the Tugwell Bill. ¶ Chemical Exposition is declared a success by those exhibiting. ¶ Freeport Texas begins shipments of sulfur from new Louisiana dome. ¶ Alcohol producers from molasses and by synthetic processes protest against government provisions restricting their sales to 10% of total used for whiskey blending purposes. ¶ Consumers for 1st time in many years are deliberately building up large inventories as '34 contract prices show important advances. ¶ President Roosevelt approves Tariff Commission report on continuance of present rate of 5c on synthetic camphor. ¶ Dr. Little is feted on his 70th birthday. ¶ Colin G. Fink is presented with the Perkin Medal. ¶ Dr. E. H. Killheffer takes an indefinite leave of absence because of ill-health. ¶ Merz, Calco, is reelected president of the S. O. M. C. A.

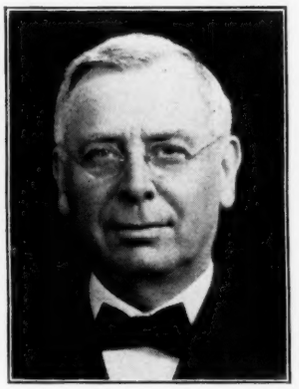
George P. Adamson



Alfred S. Burdick



John F. Queeny



William T. Elkinton

Talc

An Inert Chemical of Many Varied Industrial Uses

By A. E. Karr

THE chemical, talc, was first mined in the year 1859 in Ducktown, Tenn., A. A. Campbell being the pioneer producer in the United States. At that time talc was sold in the market at $80 a ton. This price was profitable though the talc was hauled from Ducktown to Cleveland, Tenn. by wagon. Later this production became unprofitable, but a railroad through the talc area soon caused renewed activity and prices rose.

Talc, a hydrated silicate of magnesium, having the formula $H_2Mg_3\ (SiO_3)_4$, occurs in nature between

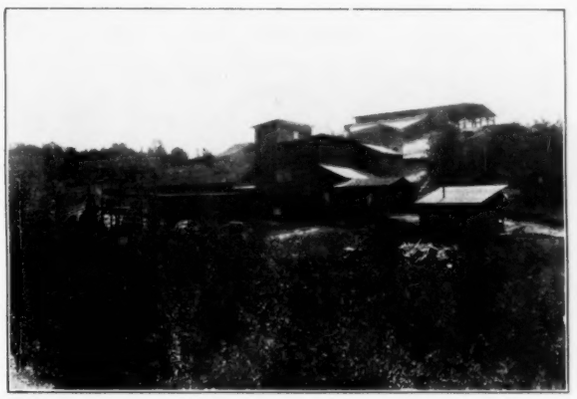
The state of New York boasts the largest production of talc in the country, one half of which comes from Gouverneur.

marble whose chemical name is calcium carbonate and the mineral, quartzite. Under suitable conditions talc is prepared by nature from rocks known as pyroxenes, amphiboles and some kinds of micas. It is thought that olivine, a magnesium iron silicate, undergoes a chemical change when exposed to the atmosphere. The iron and part of the magnesium present is removed in the form of the oxides of the metals while the product left is talc, $H_2Mg_3\ (SiO_3)_4$. The calcium magnesium silicate rock, tremolite, reacts with gases and moisture in the air with the result that talc is also formed.

Talc when first obtained from the earth is very soft. Its hardness is one according to the Moh scale of measurement. Another characteristic property is its slipperiness and smoothness to the touch. Its color ranges from pure white to gray or green depending on the metallic element other than magnesium that is present.

Talc as a constituent in cosmetics must be very white and capable of being ground to a fine powder. If, however, it is desired to use talc for such commodities as insulators it must be subjected to a heat the temperature of which lies somewhere between 800° C and 1000° C. During the heating the soft talc becomes so hard that it cannot be scratched by a diamond. A chemical reaction takes place during the firing. All the hydrogen and part of the oxygen present is expelled since X-ray photographs show that hard talc is magnesium silicate. If the temperature is raised 1,000° C. there is some cristabolite present. The insulators sold under the name, "lava," are produced by first molding the soft talc into the desired shape and then heating to hardness at a temperature of approximately 850° C.

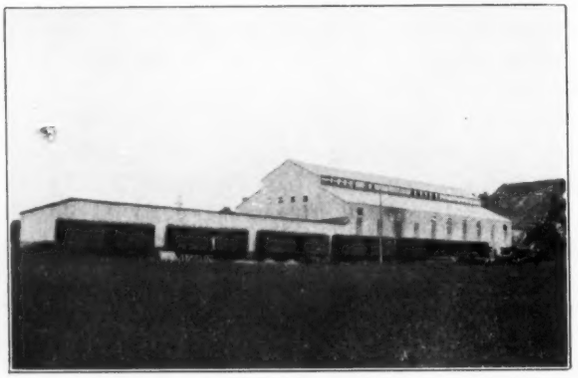
Recently a test has been devised which differentiates between talc and kaolin. It is a colorimetric method based on the color change that occurs when a freshly prepared 1% alcoholic solution of hematoxylin is added to a neutralized, filtered hydrochloric acid solution of the material to be tested. If the final color obtained is yellowish talc is indicated; if a rose violet turning to blue violet, the original substance was kaolin.



W. H. Loomis Talc Corporation plant at Gouverneur, N. Y.

Manifold are the uses of talc. While it is soft it can be cut into electrical fittings, bushings, blocks, tubes and discs. These forms are heated and "lava" obtained. The electrical resistance of the latter is high and it is free from grit and iron oxide. Crayons and French chalk are also made from talc. About 1.0% of all talc marketed is in the form of "lava" products and crayons. From 93 to 96% goes to market in powder form. This is used in the manufacture of paint, paper, rubber, cosmetics and ceramics. One of the newest uses is coal dusting. Since talc is chemically inert it helps prevent the coal from reacting with the oxygen of the air. Hence dusting coal with talc is one of the ways employed to prevent spontaneous combustion. Talc is useful too, as an insecticide. In this capacity the effectiveness is due to the fact that the pores of bugs are closed by coating them with the chemical.

In the world production of talc the United States leads. France is second and Italy, third. The United



Shipments of talc have increased greatly due to its broadening use as a filler in the plastics field.

States obtains most of her imported talc from France. Italy supplies the second largest quantity imports. In 1928 Russia exported talc instead of importing it. Five tons were sent out from Ural while in 1929 exports rose to eight hundred and eight tons of talc.

The production of talc in the United States is centered in New York State. One-half of the domestic talc comes from Gouverneur, N. Y. and is known as "Governeur talc." It is a fibrous variety of the compound. Nearly one-quarter of all of the talc marketed in the United States comes from Vermont. The lava talc is obtained principally from Maryland.

The following is a table of the marketed production of talc, in the United States, in short tons, from the year, 1922 to 1931.

Year	*Quantity*	*Value*
1922	198,684	$2,859,897
1923	196,692	3,012,253
1924	203,821	3,515,556
1925	182,256	2,011,792
1926	181,568	2,110,994
1927	192,316	2,234,724
1928	202,976	2,537,994
1929	219,783	2,628,662
1930	179,385	2,108,338
1931	163,752	1,852,472

The market price of talc has become more and more fixed by a standard rather than by the monetary needs of the producer. The latter method was resorted to when talc was first placed on the market. At that time, due to inefficient machinery and methods of production, each manufacturer demanded a price to cover his costs plus a profit to himself. This caused haphazard prices to be current. Development of standard methods has aided materially in steadying the market price.

The hydrated silicate of aluminum, $H_2Al_2(SiO_3)_4$, pyrophyllite, is very similar to talc and in some respects can be used as a substitute for it. It possesses the soapy feel and the softness of talc and it, too, when ground, is colloidal in nature.

Every effort is being made to discover greater uses for talc. Difficulties are encountered, however, since talcs from different localities are unlike in character. Much injury can be done if one is not familiar with the physical and chemical properties of the particular variety of talc with which one is working.

World Output Magnesite

Recent world production figures for magnesite have been compiled by the staff of the Imperial Institute in London, and published in their "Statistical Summary on the Mineral Industry of the British Empire and Foreign Countries, 1929-32." In a number of instances, however, the 1932 figures are not available. The information shows that Austria continues to maintain its importance as a world producer. The following are the Austrian figures: Crude magnesite, 132,277 tons in 1932 (176,606 tons in 1931); caustic magnesite, 30,412 (34,211); dead-burnt magnesite, 28,298 (38,186); magnesite bricks, 15,283 (23,441). In the cases of the three last-mentioned products, however, the products are derived from the crude magnesite, and the production figures are not additional to those of the crude.

In the case of Greece, it is seen that output of crude magnesite increased from 49,200 tons in 1931 to 70,000 tons in 1932. In the U. S., output of crude magnesite dropped from 65,716 tons in 1931 to 34,341 tons in 1932. Of the derived products, U. S. sales of caustic magnesite dropped from 5,268 to 3,013 tons between the two years, and those of dead-burnt magnesite from 25,206 tons to 13,246 ton. Russian output of crude magnesite which jumped from 150,000 tons for the year ended September 30, 1930, to 242,000 tons in the ensuing twelve months, is not shown for a later period. Indian output of crude has risen from 5,333 tons in 1932 to 13,864 tons in 1933; that of Australia from 3,475 tons to 5,362 tons; and that of South Africa from 1,366 tons to 1,396 tons. Canadian output of crude is not available for 1932, although in 1930 and 1931 it was 24,677 tons and 23,963 tons respectively. The figures available do show, though, that last year's Canadian output of caustic and dead-burnt magnesite was 7,939 tons, after the 10,188 tons of 1931 and the 11,907 tons of 1930.

Of the European countries not yet mentioned, it is seen that Czecho-Slovakian production of calcined magnesite last year at 13,103 tons was just a little lower than in 1931, and that Norwegian production of crude dropped from 1,555 tons in 1932 to 1,290 last year. Turkish output also declined considerably—namely, from 2,162 tons to 305 tons in 1932. For Italy, figures are not available later than 1931, in which year the quantity of crude magnesite produced was 3,415 tons. Serbian output in 1931 was 22,700 tons of crude after the 17,701 tons of 1930.—*Chemical Trade Journal.*

Chemical Consumption

A digest of new products and processes in process industries for the user of chemicals.

Processing Suede Gloving Leathers

Suede gloving leathers are manufactured from alum sheep, the raw skins for which are imported from several different countries. The skins are soaked in water overnight and this usually suffices to soak them back effectively. To complete satisfaction, it is advisable to use some chemical assistant in the soaks. Only acids or salts may be used on this class of goods. Alkalies and sulfides must be barred because of their deleterious effect on the wool. Of course, if the wool is of no consequence, then an alkali or sulfide soak may be used.

The acids for the acid soak may be chosen from the following:— Hydrochloric, liquid bisulfite or formic acid. Usually tanners prefer the hydrochloric acid because of cheapness. Two and one-half parts of commercial hydrochloric acid per 1,000 parts of water (i. e., 2½ lbs. per 100 gallons) is usually found to be sufficient.

The skins are soaked for twenty-four hours in clean water, then transferred to a weak acid soak in the case of wool skins, or a weak sulfide soak in the case of hair sheep. At the end of the soaking period, the skins are transferred to a drum and drummed for 30 to 60 minutes in running water. The skins should be examined as they are removed from the drum and the workman emptying the drum should have instructions to throw out any skins which are not completely softened, particularly in the neck and shanks. Such throw-outs should be broken over on the beam in order to complete the softening process.

The soft soaked skins are allowed to drain and are then painted on the flesh side with a paint made up from:

100 lbs. burnt lime and 11-13 lbs. red arsenic.

The painted skins are folded down the middle of the back, with the flesh side in and left overnight. Next morning the wool is loose and is pulled. The pelts are washed up in cold water then paddled in lime liquors made from fleshly slaked lime with or without the addition of some red arsenic, according to the nature of the pelts. The paddles should not be kept in motion continuously but allowed to turn for ten minutes every hour during the working hours, and after two to four days of this treatment the liming should be complete.

The pelts are scudded lightly on the grain side to remove any remaining hair or wool, particularly the edges and shanks, and are then turned over and fleshed. After having been washed in soft tepid water for one-half hour, the fleshed pelts are puered or bated. According to most authorities, puering can be entirely dispensed with in favor of using artificial bating materials. The following are the particulars as supplied by a well-known firm of artificial bate manufacturers:—

The washed limed pelts are well drained and weighed. The bating is done in a paddle, which is run up with water at 95 degs. F. 10-14 ozs. of artificial bate is weighed out for every 100 lbs. of drained pelt, 12-15 ozs. for hard natured skins, e. g., Arabians. The bating material is sprinkled into the paddle and, after five minutes' running, the skins are entered and the paddle kept running for one hour, allowed to stand for a quarter of an hour, then paddled for two or three minutes every half-hour. Bating will be complete in about four hours.

An alternative method is described, in which the bating is carried out overnight. The bating temperature is lowered to about 85 degs. F. The bating liquors are not thrown away after use but kept for the next pack. It is warmed up to 90 degs. F., the skins paddled in it for twenty or thirty minutes and then thrown out to drain. Meanwhile, the old liquor is run off with the exception of about 10 per cent. and the paddle filled up with fresh hot water. The necessary amount of artificial bate is thrown into the water, the skins entered and the main bating process carried through.

The bating process is complete when the skins are flaccid, the scud is loose and grain silky. Only experience in handling skins in this stage will enable the operator to be certain that the process is complete. Pelts for gloving leathers should be very well bated. The elastin fibre should be completely destroyed in order to produce the stretch necessary in gloving leathers. Nearly five hours' bating is required to destroy the elastin fibres, so that one should not expect to hurry the bating unduly.

The bated skins are well scudded and bran drenched, and are then ready for the actual tanning process. The usual alum, salt, flour and egg yolk tawing mixture can be applied in the form of a thin paste.:—

5 per cent. alum; 4 per cent. flour; 3 per cent. salt; 2 per cent. egg yolk.

The pelts are drummed in this paste for several hours in a polygonal or box drum. Some dressers add a second lot of paste of the same composition and continue the drumming for another three or four hours. Eight to ten hours' drumming with a suitable taw mixture usually suffices to convert the pelt into leather. The tawed skins are horsed up overnight to drain and then hung up to dry.

The dry leather is usually very hard and crusty. It should be conditioned in clean damp sawdust, well and carefully staked,

allowed to dry out and staked again. The skins at this stage should be extremely soft, perfectly white and free from any discoloration. The skins should be carefully wheeled on the flesh side to produce a suitable fine nap.

The speed of running of the wheels must be carefully adjusted to meet the manufacturer's own requirements. A quick running wheel will have a drastic cutting action on the leather. A slow running wheel will raise the nap, but not cut away much leather. The fineness of the emery powder on the wheel influences the cutting action. A much greater action is afforded by a coarse powder than that given by a fine powder. Some glove leather dyers have two different types of gloving wheel, a coarse wheel covered with a coarse emery running slightly faster, about 120 revolutions per minute, and a fine wheel, covered with fine emery powder running at not more than 80 revolutions per minute.

Other manufacturers use carborundum wheels for producing the nap. The coarse flesh layer is removed by means of a fluffing wheel and the skins are then finished off on a carborundum wheel.

Either at this stage or before the wheeling process, the skins should be put on one side for several weeks to allow the leather to "age". This fixes the alum in the leather to a certain extent.

After the ageing process the skins are selected for dressing. They cannot be mordanted and dyed like vegetable tanned sheep skins because a certain amount of the tannage is removed every time the leather is soaked in water. Special measures have to be adopted to counteract this loss of the tannage.

Alum leathers do not readily wet back. Although a portion of the tannage is easily washed out, other parts do not wet back and a mere soaking in water leaves white spots, which will not dye and finish satisfactorily if left in that state.

The aged selected skins should be drummed in an extremely weak ammonia solution, 1 per cent. of weak ammonia (20 per cent.) should be added to some warm water at 25-30° C. and the skins drummed with this in a slowly revolving drum (14-16 revs./min.). After thirty minutes, the skins will generally be found to be completely wet back. They are now ready for re-egging with 20-25 grams of egg yolk for every small skin.

The re-egged skins are struck out flesh side up on a slate or marble table, and brushed first with an ammonium carbonate solution (one per cent.). This is followed by a brush application of fustic, fiset wood, bresiline or rhamnetine crystals solution (five per cent.) according to the shade required. It is then possible to produce certain brown shades by applying a "striker", e.g., copper sulfate, titanium potassium oxalate, ferrous sulfate alum or potassium bichromate (one-half to one per cent. solution). This will "strike" a color with the previously applied natural dyestuff and experience will indicate what striker or mixture of strikers is required to produce the desired shade.

Another mode of procedure is to apply a weak solution of potassium bichromate first, e.g., a one per cent. solution, and then without allowing the skin to dry, apply five coats of a solution of an acid or basic dye. Some acid dyestuff solutions are readily and evenly fixed by the leather. A one per cent. solution or weaker will prove quite strong enough for the purpose. The solution is applied with a soft bristle brush and dabbed into the leather. The solution is repeatedly dabbed into the skin, going over different parts several times. This dabbing forms miniature pools of dye on the surface of the leather and it will be found that 10-15 minutes of such treatment will have dyed the flesh.

Should any difficulty be experienced in obtaining a level dyeing, then the bichromate application should be succeeded by a weak solution of fustic paste, myrobalans extract or suitable natural dyestuff. This will provide a mordant base for the coal tar dye solution which can subsequently be brushed on by the usual method of leather staining.

There is another method of preparing alum gloving leather for dyeing, in which the skins are first soaked overnight in a weak solution of salt and lactic acid.

3 ozs. lactic acid (30 per cent.), 5 ozs. salt, 6 gallons water.

Next morning, the skins are drummed for one hour in the same solution, drained and immediately retanned for one hour with two ounces of gambier per skin, which is subsequently fixed with one-twentieth of one ounce of potassium bichromate per skin. This is added to the liquor in which the gambier treatment has been given and allowed twenty minutes drumming.

The skins are now rinsed and drummed in a fresh lot of water to which the dye solution is added at intervals. They are allowed to drum in this for one hour, after which a solution of suitable metallic salts is added to strike and fix the color. The leather is drummed with the striker for twenty minutes, rinsed and re-egged in a fresh bath with

1 oz. egg yolk, 1-3 oz. salt

per skin (medium size). Half an hour suffices for this and then the skins are struck out, air dried, conditioned, staked and finished. The following recipes give some idea of the type of dyestuffs and strikers used.

1. Dye:— 1 oz. euchrysin RR. (per dozen skins).
   Striker:—$\frac{1}{16}$ oz. copperas.
   $\frac{1}{16}$ oz. bluestone.
   $\frac{1}{16}$ oz. bichromate.
2. Dye:— 1 oz. Bismarck brown.
   Striker:—$\frac{1}{16}$ oz. copperas.
   $\frac{1}{16}$ oz. bluestone.
   $\frac{1}{16}$ oz. bichromate.
3. Dye:— $\frac{3}{4}$ oz. methylene blue.
   $\frac{1}{4}$ oz. Bismarck brown.
   Striker:—$\frac{1}{16}$ oz. copperas.
   $\frac{1}{16}$ oz. bluestone.
   $\frac{1}{16}$ oz. bichromate.
4. Dye:— 5 oz. gambier.
   $\frac{1}{2}$ oz. fustic crystals.
   $\frac{1}{4}$ oz. hematine crystals.
   $\frac{1}{4}$ oz. nigrosine.
   $\frac{1}{40}$ oz. acid violet 4BN.
   Striker:—$\frac{1}{8}$ oz. copperas.
   $\frac{1}{10}$ oz. bluestone.
   $\frac{1}{200}$ oz. bichromate.

Most glove leather manufacturers have experienced difficulty in producing a satisfactorily dyed gloving leather without chrome retanning, unless the leather is dyed with natural dyestuffs. The natural dyestuffs contain filling matter, and vegetable tanning which plump the skins, whereas the ordinary alum leathers finish out very much thinner if they are dyed with coal tar dyestuffs only. The new chrome dyestuffs offer advantages in this respect, because if they are applied on a table by means of a brush the leather is not unduly "distressed", neither is it excessively plumped, as happens if natural dyestuffs are used. *Abstracted from The Leather Trades' Review.*

Leather

Emulsions for Leather Industry

The mechanism of emulsion formation has been explained in the light of modern theories of orientation at liquid/liquid interfaces in a recent paper by Dr. R. H. Marriott. Such considerations explain many points observed in practice. For example, emulsions of acid oils (oils containing some free fatty acids) in water and soap are more stable than those of similar but neutral oils. Again the addition of a fatty acid or some similar substance to a mineral oil renders its emulsion in soap and water stable. Of the reverse type of emulsion to that previously considered, *i.e.*, the water-in-oil type, this is met with in the scudding operation, when the scud obtained in this process consists of an emulsion of this sort. If not removed during liming work, it cannot be removed later when the skins are acid, but gives rise to grease troubles in the finished leather. The use of emulsions is confined mainly to final stages of leather manu-

facture, *i.e.*, fat-liquoring. A fat liquor should have a certain degree of permanence and the dispersed oil particles should be sufficiently small. If too permanent, it will not "break" and deposit the grease within the fibre, while if the oil particles are too small, excessive penetration may result, giving a raggy leather. In the fat-liquoring of chrome leather, particularly, it is required to avoid reversal of the emulsion due to the presence of chrome salts. To this end, the leather is neutralized after tanning, and sometimes a little alkali added to the soap and oil fat-liquor. Deposition of the fat just inside of the leather is caused by the acidity present or by combination with the colagen-bound chromium. The possibility of replacement of some SO_4 in the chrome complex by fatty acid should not be overlooked.

Excess alkali in the fat-liquoring of chrome leather should be avoided as "breaking" of the emulsion is retarded until the central parts of the skin are reached. Premature breaking of the fat-liquor itself is often prevented by the use of sulfonated oil as emulsifier. Such emulsions are not very stable and frequently necessitate the use of egg yolk or gums as additional emulsifiers or stabilizers. Sulfonated fatty alcohols are among the more recent emulsifiers, being unaffected by acids and very little affected by lime and magnesium salts, but react with chrome and aluminum. With vegetable tanned leather less permanence of emulsion is required while no alkali should be present because of stripping action on the tan. A simple sulfonated castor oil and cod oil mixture is very satisfactory.

Ferment for Hides

Raw hides or skins are treated at 37° C. with a catheptic ferment 0.1 part of powdered liver, spleen, kidneys or the mucous membrane of the stomach is extracted with 100 parts of water. The development of bacteria is retarded by an addition of 0.5 per cent. boric acid. The raw skins are brought to pH = 5 by treatment with acetic acid. The catheptic ferment loosens the hair in forty-eight hours. After unhairing the skins, they are treated with a neutral solution of salt before tanning. A softer leather is obtained if the skins are treated with a 0.2 per cent. solution of NaSH or a sodium salt of thioglycollic acid.

Patents—Tanning

Tanning composition. No. 1,938,022. J. Huismann & G. Mauthe, to I. G. F., Frankfort, Germany.

Tanning processes; four treatments of hides comprising ten uses of five chemicals. Nos. 1,938,388-89-90-91. A. O. Jaeger & H. W. Witzel (as to No. 1,938,391) to The Selden Co., Pittsburgh.

Coatings

Rubber as Paint Ingredient

The authors of a paper read at a joint meeting of the Rubber Industry and the Oil and Color Chemists' Association, in London, confined themselves mainly to the ordinary paints used for house decoration and similar purposes.

The rubber is modified by reagents as mild as can be found, and success attained by the use of catalysts acting in the cold and without utilizing intense aeration or agitation with oxygen. Reduction of viscosity can be effected by the ordinary paint driers, which also act as oxidation catalysts, causing the rubber film to dry and harden in the same manner as an oil film.

The viscosity of a rubber solution can be reduced by an organic copper salt, such as the stearate or oleate, by merely setting aside in closed vessels without aeration. Cobalt is more effective than copper, manganese not far removed from copper, and lead less effective. Although possible to produce a paint film from a rubber solution, driers and pigments, without the addition of oil, and such a film has some advantages over an oil film, it is more expensive and does not possess the weathering properties of an oil film. By combining the two very definite advantages are obtained. Figures given show that cobalt linoleate is a good reducer, the best proportion being two and one-half per cent. on the rubber. For some purposes, *e. g.*, where an appreciable quantity of thinners is an advantage—lead linoleate is most suitable.

If even a small proportion of the modified rubber is included in a paint formula it materially alters the constitution of the finished paint, effecting a more complete wetting of the pigments by the vehicle. Oil paints containing rubber showed greatly improved flow, and rubber is thus of particular value as an ingredient of flat paints when the permitted amount of non-volatile binder is limited. They also help to prevent settling and caking when a ready mixed paint is stored. In the incorporation of the rubber, the greatest efficiency is obtained by milling the dry pigment with the rubber solution and the oil, and finally thinning to normal paint consistency with volatile thinner. As a result of experiments, a combination of rubber and stand oil has been selected as giving the most promising results. A series of flat white paints was prepared; they brushed out freely and dried to a perfectly smooth flat finish, whereas the controls (in which the rubber was omitted from the formulae) showed typical brush marks. The addition of a proportion of rubber to gloss paints also improved the flow and eliminated the brush marks, with the result that the gloss was also enhanced.

Effects of Driers on Durability

A preliminary report is given on a series of exposures of "single-drier" linseed and tung oil varnishes over-primed and unprimed steel. Each drier was added as linoleate and as naphthenate. Starting with 0.038 per cent. Co on the weight of oil, the individual amounts of driers used were Co: Mn: Pb::1:1:4 and increasing amounts of drier in the ratio 1:3:7:10. The drying times of all the varnishes are recorded. After 11 weeks all were giving satisfactory protection and no definite comparisons could be made.

New Raw Lacquer Material

Pentaerythritol is arousing interest abroad as a new lacquer material, according to a recent report appearing in *Chemical Age* (London), Dec. 9, p. 530.

Prepared as far back as 1900 by condensation of formaldehyde with acetaldehyde in presence of lime, pentaerythritol $C(CH_2OH)_4$, has aroused renewed attention of recent years on account of its possible application in the lacquer industry and the explosive qualities of its nitration products. As condensing agent in the reaction in place of lime, H. Molinari, *Giornale di Chim. Ind. ed Applicata*, 1933, page 325, states that caustic can be used and is to be preferred in continuous working where reaction product is concentrated without delay.

For producing pentaerythritol by the lime process, the theoretical mixture of formaldehyde and acetaldehyde is first held at a temperature of 15° C. in the presence of water and pure calcium oxide (free from carbonate). Temperature is allowed to rise to 40° C. in the course of 2 hours, when the solution of the reaction product is filtered, concentrated to about one-quarter of the original volume and centrifuged. Partial purification is then achieved by redissolution in water acidified with sulfuric and concentration to the crystallization point. Crystal mass is centrifuged and dried in a vacuum and although still far from pure (containing dipentaerythritol, ash and resins), can be used for nitration. Further purification by crystallization is recommended, however, with a view to obtaining a more satisfactory yield of nitration product. After the first crystallization the melting point is 220° to 225° C. which is raised by repeated crystallization to 238° C., but only at the cost of a loss of as much as 30% in the yield (according to Richter the pure substance melts at 250° to 255° C.). It should be noted that the dipentaerythritol met with in the crude product yields a hexanitrate on nitration which does not detract from the technical value of pentaerythritol nitrate as an explosive.

Details of what is claimed to be improved nitration method are set forth by Dr. A. Stettbacher, of Zurich, in the October issue of *Nitrocellulose* (Berlin). A remarkable feature of the

process is that it dispenses with sulfuric in the nitration liquid thus contrasting with the requirements during nitration of glycerine and cellulose, etc., where a large proportion of sulfuric is indispensable. Other notable features of the process are the relatively small proportion of nitric acid required, high yield of nitration product, the possibility of conducting the reaction without artificial cooling at temperatures between 15° to 25° C., and the comparative absence of danger during the reaction. In spite of the high explosive efficiency of the tetranitrate process in question it is described as one of the simplest reactions of explosives technology.

Synthetic Drying Oil

A new oil, exhibiting the desirable characteristics of china wood oil but free from the latter's objectionable properties (including its too rapid gelatinization when heated at 290° C.), is derived from castor oil—the main feature of the process being glycerolesterification of ricinoleic acid (octadecadiene-9, 11-acid-1)—which compares favorably in price with china wood oil. There appears to be some prospect of commercial exploitation.

Patents—Coatings

Nitrocellulose-terpene alcohol lacquer. No. 1,935,917. L. P. Rankin, Dover, to Hercules Powder Co., Wilmington.

Manufacture of varnishes and priming compounds. No. 1,936,230. E. W. Frenkel & A. Brust, Leipzig, to Pittsburgh Plate Glass Co.

Coating composition of drying oil and an acid derivative from the fatty and resin acids. No. 1,936,534. H. O. Albrecht, Flint, Mich., to E. I. du Pont & Co., Wilmington.

Lacquer free from water-miscible elements, a nitrated carbohydrate solution. No. 1,936,989. G. H. Peters, to Hercules Powder Co., Wilmington.

Paint and varnish remover. No. 1,938,714. L. E. Mills & S. W. Putnam, to The Dow Chem. Co., Midland, Mich.

Textiles

Perborate of Soda as Bleaching Agent

Perborate of soda is a pure white, crystalline, absolutely neutral salt, stable in air free from carbon-dioxide, but in carbon-dioxide laden air readily gives up its extra oxygen, though usually more slowly than other oxygen bleachers. It should contain not less than 10.4 per cent. of active (bleaching) oxygen. Any trace of yellowness may be due to the presence of iron, or the compound may have decomposed due to contact with moisture. A. Jones, in *The Dyer and Calico Printer* tells us that it has come into use because of the greater instability of the other oxygen bleaching agents. Peroxide of sodium decomposes violently, sometimes with explosion; on contact with water and hydrogen peroxide gives up its oxygen on storing, thus losing its bleaching value. Perborate of soda is the "doyen" of the milder oxidizing and whitening agents. It can be safely used and stored in bulk.

The decomposition of sodium perborate will take place in an acid solution, whereas the two peroxides just mentioned only bleach in an alkaline solution; hence, it is far safer to use perborate on materials which are affected by alkali, such as wool and silk.

It is well known that iron acts as an oxygen carrier causing quick oxygen absorption and over-bleaching and tendering. In the case of fabrics that may contain iron stains, if bleaching is done in an alkaline solution, the stains are likely to be fixed as iron hydroxide, which will then react locally as oxygen carrier to produce tender red spots. In an acid bleach solution iron stains tend to be dissolved out by the acid liquor and are thus rendered innocuous.

Further, the bleaching action of perborate of soda is more regular and consistent. Peroxide of soda is liable to be so violent in its decomposition that the nascent oxygen atoms cannot be utilized to bleach the fabric and thus combine into molecules with themselves and are no longer available or active for bleaching. This also applies, to a lesser degree, to hydrogen peroxide, particularly where the higher temperatures of bleaching are used.

Again, with perborate of soda the end decomposition product is borax, which is a very mild salt. If a mild weak acid is present, no possible irritant action can ensue, whereas with the usual hydrogen peroxide and silicate of soda combination irritant action is very probable. This is why it has found increasing use in silk, wool and hair bleaching; and for the preparation of cosmetics, face creams, etc.

The bleaching reaction is represented by the equation:—

4 parts perborate of soda+
4 Na BO_3+

Sulfuric acid=	Sulfate of soda+
H_2SO_4=	Na_2SO_4+
Borax +	4 atoms active oxygen
$Na_2B_4O_2$	40

The most delicate fabric remains unaffected by this treatment, and there is no loss in tensile strength. Lustre and a soft handle are produced. The fabric never looks "strained," as so frequently happens when peroxide or chlorine bleaches are employed, and so is the most economical of oxygen bleachers.

Bleaching, general conditions: The bleach bath generally consists of water, acid and perborate in the following proportions: Water 200, monobasic acid 3, perborate 6 to 10, so that the bath is just acid to litmus paper. A warm, equable temperature is best, 90 to 100° F., so that the evolution of oxygen is only as rapid as the fabric can absorb it. The fabrics are generally pressed down tightly in the bath, covered and left for 3 to 4 hours at a temperature of 100° F., rising to 140° F. gradually. The temperature should be kept as low as possible, and where an alkaline bath has no deleterious affect (cotton and artificial silk), this should be used, silicate of soda being added, and the temperature maintained at 100 deg. F., as this is far more economical since the oxygen is evolved so slowly that all is used.

Note that if sulfuric acid is used the amount is halved, because it is dibasic; any acid can be used, and tartaric and acetic are sometimes employed.

Precautions: Iron or copper should not be present even in minute traces, as these cause rapid evolution and loss of oxygen. The vessels should be of wood, pegged, not nailed, or they may be made of slate or lead.

Pyridine as a Stripping Agent

Recent papers on the dyeing properties of direct colors mention the use of pyridine as a stripping agent. The amount has been given as 15 and 25 per cent. concentration in aqueous solution. In a few trials several dyed shades were readily stripped to white by boiling in 20% pyridine under a condenser. One or two boilings sufficed and dyes were completely removed which would not strip white under any conditions with the hydrosulfite types of stripper available. This complete stripping is advantageous where colored reaction products would interfere with any redyeing or color test to be made later; also in special cases by avoiding acids, alkalies, or oxidizing agents as strippers or any drastic treatment. British investigators have used this method as a means of recovering dyes from fibres so that amounts of dyestuff can be conveniently estimated colorimetrically.—*Textile Colorist*, p. 812.

Cleaning and Dyeing Process

The "Bauer Process," a new method of cleaning and dyeing textiles, especially furnishing materials, introduced abroad, is finding ready use from the point of view that its most important feature is that it enables upholstery, wall and floor coverings to be cleaned, or cleaned and dyed, *in situ*.

There are two aspects of the process, first, a new mode of cleaning and, secondly, a new solvent preparation. This solvent is non-toxic, does not harm textile fibres or leather, does not remove dyestuffs, operates quickly, and not only removes dirt but also restores lustre to the material. The process is not one of spraying; no machinery or apparatus is required. The solvents are supplied ready for use and can be applied by unskilled workers, under the guidance of someone skilled in the process. If desired, cleaning may be followed by dyeing, also *in situ*, with special preparations.

In the case of leather, furniture submitted to the treatment does not lose its suppleness or become brittle, the grain does not become clogged and the dye does not rub off.

The advantages of this method are very great, where it is desirable that the restoration of furnishing materials should take place without removal of the materials or interruption of business routine, as in the case of cinemas, theatres, hotels, waiting rooms, shops, and so on. Another claim is that the process offers substantial economies, where frequent purchases of new furnishings are not possible but the maintenance of cleanliness is desirable, as in the case of railway coaches, and municipal and government buildings. It is also stated that museums, churches, and so on, can use the Bauer process to restore tapestries and other objects of art to their original beauty.—*The Dyer & Calico Printer*, November 24, 1933, p. 539.

Month's New Dyes

Indanthren Direct Black G Paste
Indanthren Direct Black RR Paste

New additions to the General Dyestuff line. Especially recommended for the production of deep black shades on cotton goods. Are applied by the direct method of dyeing, that is without any special after treatment. The dyeings have excellent fastness to light, washing, boiling soap and chlorine, and if the usual precautions are observed, the dyeings withstand the ordinary boiling soda chlorine bleach. Due to their very good solubility the new brands can also be recommended for machine dyeing. Company has issued circular on these products.

Fast Orange Salt RD

This product represents a new stable Diazo Salt which General Dyestuff has placed on the market to complete their range of shades possessing exceptional all around fastness properties. Combinations produced on Naphthol AS, AS-OL and AS-RL ground in full shades produce brilliant oranges of reddish cast and possess the same excellent fastness properties as Indanthren dyeings. These combinations are superior to the older range of orange shades in fastness to light and hot pressing and are suitable for the dyeing of piece goods and yarn by all methods of application.

Patents—Textiles

Vaporizing entraining agents in process of separating liquid organic substances from mixtures. No. 1,936,172. H. F. Oxley & L. Fallows, to Celanese Corp., N. Y.

Extruding dissolved natural silk for making filaments, threads or yarns. No. 1,936,753. Camille Dreyfus & Geo. W. Miles, to Celanese Corp., N. Y. City.

Neutralizing aliphatic acids containing froth-producing substances. No. 1,936,754. Camille Dreyfus & C. I. Haney, to Celanese Corp., N. Y. City.

Viscose solution containing salt of dithio-carbonic acid-o-isobutyl ester. No. 1,937,110. R. Elssner, Tenn., to Amer. Glanzstoff Corp., N. Y.

Artificial silk filaments of low viscosity cellulose, and method of pigmentizing. No. 1,938,312. H. P. Bassett & J. H. Torrence, to Tubize Corp., N. Y. City.

Soluble metal salt treatment to prevent loss of lustre in processing cellulose materials. No. 1,939,261. A. J. Hall, England, to Celanese Corp. of America.

Chemical Specialties

Veterinary Cleaning Agent

Recent investigations at Mellon Institute indicate probable valuable applications of sodium metaphosphate in the field of veterinary medicine. This is now available in powder form for preparing solutions for washing and rinsing dogs and other furred animals. A special preparation of sodium metaphosphate, rendered slightly alkaline with sodium borate and perfumed with a very little oil of cedar, has been used in the clinical work. When mixed according to the directions of one tablespoonful of this powder in one gallon of water the resultant solution contains approximately 0.5 per cent. of sodium metaphosphate. In part, the reaction of this solution with soap is to form a soluble double salt of the phosphate with sodium and calcium, leaving the soluble soap available for use. The results have been summarized as follows:

1. Much less soap is required to generate a satisfactory lather. 2. In rinsing, the fur and skin of the animal are apparently cleaner than after washing with soap alone. 3. Is of decided advantage in cleaning the skin and fur of animals that have been treated locally with ointments. 4. In concentrations of 2 or 3 per cent. is of value in cleansing the area about a localized skin lesion (such as eczema) and preparing the area and the lesion itself for application of the medicament.

Ink to Replace Carbon Paper

An ink, to obviate the use of carbon paper in duplicate books, etc., has been introduced under the name "Cartis," and is said to be as easy to work as ordinary letter-press ink. The method of use is to print the ink on the back of the top leaf, the film of color being transferred under writing pressure, thereby being a prompt dismissal of the use of carbon paper. The ink is stocked in six colors including black, and remains effective for a considerable period.

Sterilizer for Bulbs

W. Newton, R. J. Hastings, and J. E. Bosher (*Canadian J. Research*, Sept., '33, p. 31), describe use of silver nitrate-potassium cyanide solution for sterilization of narcissus bulbs. A control of 96% is possible in an evacuation process where a solution of 0.05% of silver nitrate and 0.015% of potassium cyanide is forced into the bulb tissue.

Metals and Alloys

Rhodium Finish in Electroplating

Process recently patented suggests possibility of widespread use of rhodium as a finish in electroplating. It has already gained significance as a finish for jewelry, a very thin plating greatly enhancing the appearance of platinum jewelry. Applied to silver, it definitely prevents tarnish. Rhodium has remarkable properties. It is extremely hard, and its resistance to the attack of acids is superior to any other plating metal. Offsetting the high cost of the material is the fact that a very thin plating (not more than one ten-millionth of an inch) is remarkably continuous, and will resist corrosion and wear to a high degree. Plating process is rapid, taking no more than five to fifteen minutes to complete.

Copper Deposition

Prevention of the harmful effect of antimony in the electrolytic deposition of copper is successfully accomplished by the use of cream of tartar. When there is added to a bath containing 110 grams sulfuric acid, 35 grams copper, and 0.2 grams antimony per litre, a quantity of cream of tartar equivalent to twenty times the weight of the antimony present, the quantity of this latter in the copper deposited on the cathode is only about 0.001 per cent. Presence of the tartar is without appreciable effect on the electrolytic deposition of zinc.

Rustless Iron and Steel

In the patent literature a process for the production of rustless iron or steel containing chromium and nickel is described in the following manner: To a bath of 500 kg. molten iron or steel with the desired carbon content, there is introduced 300 kg. chromite, 30 kg. nickel oxide, 150 kg. lime, 40 kg. fluorspar, and 30 kg. bauxite. When this mass is molten to form an artificial slag, there is added a reduction mixture of metal oxides and reducing agents comprising 820 kg. chromite, 110 kg. nickel oxide, 316 kg. aluminum, and 82 kg. ferro-silicon.

Ore Concentration

Preliminary roasting of dry crushed ore at about 600° C. for approximately 15 minutes, prior to flotation or gravity concen-

tration, destroys colloidal slime by dehydration and converts manganese minerals into oxides. The calcined ore may be subjected to froth-flotation concentration using, as a flotation agent, a mixture of fish oil soap and a hydrocarbon, preferably dipentine or sulfurized dipentine. Alternatively, after grinding and sizing, the ore may be subjected to gravity concentration in jigs or on tables, and the tailings from the gravity concentration further concentrated by froth-flotation.

Patents—Metals

Metal cleaning and preparing metal for paint; orthophosphoric acid and a soap-like vegetable glucoside. No. 1,935,911. H. R. Neilson, Detroit, to H. E. Westervelt, South Bend.

Perchloride of iron and solution sodium bichromate and sulfuric acid for fixing certain ornamented metal surfaces. No. 1,937,146. Louis Gries, Chicago.

Anti-metal rust, ferrous, by metallic arsenic film from sodium arsenite. No. 1,938,961. J. H. Gravell, to Amer. Chem. Paint Co., Ambler, Pa.

Acetic-nitric-hydrochloric acid method of pickling stainless steel. No. 1,939,241. M. Taylor, to Merrimac Chem. Co., Everett, Mass.

Electrodeposition of aluminum on metal, while immersed in an organic Al compound in an organic solvent vehicle. No. 1,939,397. D. B. Keyes & S. Swann, Jr., to Ellis-Foster Co., Montclair, N. J.

Solution alkali metal stannate and alkali metal dichromate as chemical coating for aluminum. No. 1,939,421. M. Tosterud, to Aluminum Co. of America, Pittsburgh.

Soaps

Bleaching Linseed Soft Soap

The color of this soap is of peculiar significance to the user. As the product sells at a low price and a light color is demanded, it is essential that an inexpensive bleaching process be used. First step is to treat the linseed oil so that its albuminous constituents are removed. Chemical methods must be used to precipitate the soluble albumens, which can then be readily removed. The presence of soluble albumens in the oil must be determined before the treatment. These are present when a flocculent separation is obtained in a sample of the clear oil heated rapidly to about 270° C. The linseed oil should be heated for half an hour at 90° C. while being agitated, then filtered; this treatment effectively removing all the soluble albumens. When purified oil of this type is used in the manufacture of soft soap the product can readily be bleached with inexpensive chlorine bleaching liquors.

Antiseptic Soap

"Titrol" is described as a transparent, non-poisonous, glycerine soap having high germicidal potency by reason of its "Titrol" content. Manufacture of the soap is simple, being carried out in a jacketed pan, to the following formula:

Tallow	365 lbs.
Resin	35 "
Cocoanut oil	400 "
Spirit	48 gals.
Caustic Soda at 38 Bé	415 lbs.
Glycerine	120 "
Ti-Tree oil	3 %

Method of working is to heat the tallow and resin in the pan until the latter is completely dissolved, then add the cocoanut oil and glycerine, and bring the temperature to 140° F. Add the caustic solution (which must be cold), crutching meanwhile, and continue the crutching from ten to fifteen minutes. Next add the spirit, when saponification will proceed rapidly. Continue the crutching until saponification is complete, which should take thirty or more minutes.

At this stage the soap should be fairly strong in alkali in order to counteract the effects of the Ti-Tree Oil, which should now be added to the pan. After the addition of this the soap should be tested and the amount of free alkali brought down to not more than the .05% by the addition of the necessary amount of cocoanut oil. The addition of a certain quantity of water will now probably be necessary in order to make the soap transparent and free from cloudiness. Water must be added gradually—not more than three gallons at a time to a charge of the size mentioned—and the soap tested after each such addition by allowing a small sample to cool off in a shallow dish, such as the lid of a lever-top tin.

Patents—Miscellaneous

Celiulose

For cellulose acetate, pretreatment with formic acid and acetic anhydride acetylation. No. 1,936,189. Henry Dreyfus, London, Eng.

Saccharification of wood and other cellulosic materials by treatment with organic acid anhydride before hydrolysis. No. 1,936,190. Henry Dreyfus, London, Eng.

Manufacture, treatment and production of cellulose esters. Various steps and agents treated by 6 patents (applications, 1927-30). Nos. 1,936,585-590. Henry Dreyfus, London, England.

Diluent-sulfuric acid process for esterifying a cellulose compound. No. 1,936,976. F. Becker, to I. G. F., Frankfort, Germany.

Cellulosic plastic composition. No. 1,937,280. Ledru, Bidaud and Berger, France, to E. I. du Pont & Co., Wilmington.

Seasoning pyroxylin sheeting by ethyl acetate-naphtha and drying. No. 1,937,687. Gustavus J. Esselen & I. Weber to Fiberloid Corp., Indian Orchard, Mass.

New cellulose compounds and derivatives. Nos. 1,938,032-3. Leon Lilienfeld, Vienna.

For mixed nitrate-acetate (esters) cellulose. No. 1,938,176. Camille Dreyfus, and Geo. W. Miles to Celanese Corp. of Amer. (Applied '29.)

Alkyl ethers of cellulose. No. 1,938,360. David Traill, Scotland, to Imp. Chem. Industries, Ltd., London.

Water soluble cellulose derivative and sensitive layer as photographic film base and coating. No. 1,939,171. K. C. D. Hickman, to Eastman Kodak Co., Rochester.

Photographic film with colloid layer carrying calcium organic salt. No. 1,939,213. E. E. Jelley, Harrow, England, to Eastman Kodak Co., Rochester.

Motion picture film support of plastic cellulose material, hydrolyzed and prepared for dye transfer. No. 1,939,219. C. E. K. Mees, to Eastman Kodak Co., Rochester.

Nitrogen tetroxide bath as process of making cellulose acetate. No. 1,939,235. C. J. Staud & C. S. Webber, to Eastman Kodak Co., Rochester.

Methanol-acetone-ethanol treatment to render cellulose nitrate products translucent. No. 1,939,244. C. S. Webber & C. J. Staud, to Eastman Kodak Co., Rochester.

Rubber

Process for manufacture of synthetic rubber. No. 1,935,733. E. Tschunkur & W. Bock, to I. G. F., Frankfort, Germany.

Nitrophenyl-benzothiazyl-sulfide—a thiazole derivative. No. 1,936,099. R. L. Sibley, to The Rubber Service Labs. Co., Akron, O.

Mercaptobenzothiazole process of vulcanizing rubber. No. 1,936,115. C. O. North, to The Rubber Service Labs. Co., Akron, O.

3-element accelerator for rubber vulcanization. (2 distinct methods). Nos. 1,936,561-2. F. L. Kilbourne, Jr. & J. N. Street (as to No. 1,936,561) to Firestone Tire & Rubber Co., Akron.

Rubberizing base material by treating it with an aqueous dispersion of rubber-containing material from 14 specified sources. No. 1,936,999. M. C. Teague, to General Rubber Co., N. Y. City.

Emulsion for remaking disintegrated rubber. No. 1,938,011. M. Faldini, to Soc. Italiana Pirelli, Milan.

Lead carbonate method for imitation rubber from such oils as perilla. No. 1,938,015. S. Fuji & T. Fukuda, Japan.

Stable adhesive with dried formaldehyde-treated rubber latex. No. 1,938,078. C. P. MacIver, Waterbury, to Dispersions Products Inc., N. Y.

Accelerator formula for rubber vulcanization. No. 1,938,651. Ira Williams, to E. I. du Pont & Co., Wilmington.

Rubber-like mass carrying styrol and styrene polymerizates. Nos. 1,938,731-2. E. Tschunkur & W. Bock, to I. G. F. Frankfort, Germany.

Rubber-like mass containing olefine naphthalene polymerizates. No. 1,938,751. K. Meisenburg & W. Bock, to I. G. F., Frankfort, Germany.

Condensing aromatic amines with butyraldehyde for antioxidant to vulcanized rubber. No. 1,939,192. Ira Williams, to E. I. du Pont & Co., Wilmington.

Company Booklets

C85. Eastman Kodak, Rochester, N. Y. *Synthetic Organic Chemicals* for December features "The Use of Organic Chemicals in Analytical Procedures."

C86. Grasselli Chemical, Cleveland. A particularly fine brochure specially designed for architects and builders describing Grasselli precipitated barium carbonate for the prevention of efflorescence in building construction.

C87. Mallinckrodt Chemical Wks., St. Louis. December price list contains a number of important price changes, due largely to the fluctuating value of the dollar as expressed in foreign currencies.

C88. Merck & Co., Rahway, N. J. Merck's Report has been completely revamped and modernized. Prices have been eliminated and feature articles substituted.

C89. Philadelphia Quartz, 121 S. 3rd st., Philadelphia. Following an old custom December *P.'s & Q's* lists the complete line of literature available from the Philadelphia Quartz Co. on silicates and related compounds.

C90. Tennessee Eastman Corp., Kingsport, Tenn. A 19 page booklet filled with data on "Tenite, the latest and most interesting cellulose acetate" molding material.

C91. United States Steel Corp., N. Y. City. A 2 page folder giving the properties of U. S S. stainless and heat-resisting steels.

Chemical Industries,
25 Spruce Street, New York City.

I would like to receive the following booklets; specify by number. .....

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Chemical Production

A digest of plant management, design, equipment and containers for the makers of chemicals.

Producer Reflation

By J. N. Paradis

Until the established governments of the world learn that for every dollar of inflation of currency put to work there must be a dollar of new and additional goods produced, there can never be a successful inflation of currency.

What the world probably needs, today, is producer reflation induced by a properly manipulated currency inflation that functions solely as a medium of exchange for new goods and for the services that produce the new goods. Unless we increase production in times like these, we cannot return to work idle millions.

Let us not forget that depressions commence in times of prosperity when either industry or agriculture produce more things in a given time than can be absorbed by the country with full employment of labor.

When persistent over-production does develop it preys upon selling prices until there comes a time when goods have to be sold at a price rather than at a price plus a profit. It is then that there is created the shortened production which brings about national unemployment and under-consumption.

Once selling prices (as a result of the persistent effects of over-production) commence to fall, nothing can stop their fall (except an orgy of inflation) until through the terrific monetary losses sustained by both capital and labor, production is forced down below the minimum demand of the country. When that happens we have more buyers than sellers. Prices slowly move upwards to more profitable levels as demand increases. But, even so, we cannot expect a return to prosperity until all of the unemployed once working under more prosperous conditions are back to work earning and consuming.

If we try along the line of falling prices to bolster them up by ordinary currency inflation, we may succeed in proportion as to how the inflation is manipulated but we are not adding to producing and consuming power by such means. We are merely saying in effect that the purchasing power of the dollar has been decreased so that it will take more of the same money to purchase an article that cost that much less before inflation.

But—if we put inflation of currency to work producing new goods additional to what sound money that is working is being made to produce, and use the inflation of currency for that purpose alone, we are not cheapening the sound dollar in terms of monetary gold, because we are not dividing up its purchase power. Instead we are causing inflation of currency to produce its own value in terms of goods. That is the only true function of money. It must be made to produce a dollar's worth of goods for every dollar of it put to work whether it is a sound or an inflated dollar.

That is why established governments that have otherwise tried out inflation of currency have generally ended by getting into difficulties. No government can profitably inflate its currency to pay off its operating expenses (as Germany did); use the inflation to artificially boost prices (as Italy and France have done); or use it for the purpose of expanding credit (as some nations have tried) and thus reduce the purchasing power of the sound dollar, without in any event robbing Peter to pay Paul. None of these forms of inflation have ever pulled any nation out of depression, because they cannot be made to increase production and consumption—the most vital factor in a recovery to prosperity.

So then, if our own government ever seriously thinks of inflating its currency, let it do so with the single object of using all of it as the badly needed additional cash capital of the nation and supply it through the commercial banks of the country to the more or less financially exhausted industry of the United States so that any individual enterprise or industry needing working capital may commence to produce the new and additional goods needed in exchange for every dollar of the inflation of currency borrowed. If our government will look upon currency inflation in this light, it will put the idle millions back to work and do more toward a recovery to prosperity than anything else it may try.

Currency Inflation and Wages

The use of inflation of currency as outlined here would react immediately on wages throughout the country. There would result a consumer purchasing power of startling cumulative effect. It could not be otherwise when every dollar of inflation of currency put to work would have to produce—to reiterate—one dollar's worth of new wealth in terms of goods. Profitable prices would, in consequence, then develop in a natural way without any artificiality, because the additional consuming power of the re-employed idle would be there to bring it about.

Once prosperity was restored under the spur of this use of inflation of currency, the bankers acting for the government could then exchange the loan of credit of the inflation of currency for the credit of the sound money of their depositors. In this way the business of the country would be brought back again to a sound operating, sound money basis. The government could then step out of the picture since all of the inflation of currency would have been returned to the government.

With the bankers under definite orders from the government to loan freely of the inflation of currency only to legitimate business already operating, the losses that might be sustained through

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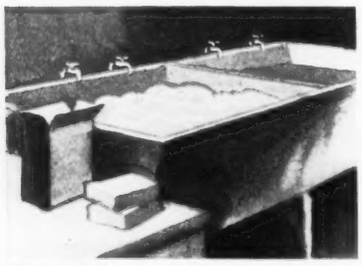
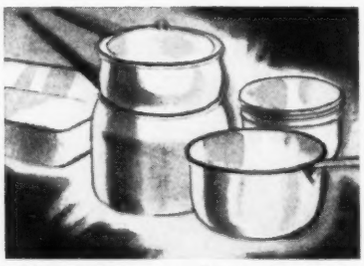
PAPER because a soda ash of the very highest purity is necessary in replenishing spent liquors as well as for de-inking operations in reworking waste magazine or book stock.

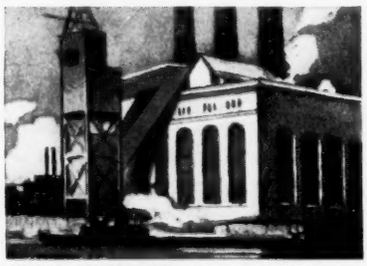
TEXTILES because of its splendid cleansing and water softening qualities and its uniform alkalinity; all of which contribute to the final quality and finish of the material.



DETERGENTS because of its valuable properties in emulsifying or saponifying oils, fats and the removal of dirt or stains. It is the principal alkali agent in soap powders.



ENAMEL WARE because Diamond Soda Ash is not only used as a most effective cleaning agent for its vitreous coat but also as a dependable element in enamel manufacture.



WATER CONDITIONING because it is recognized as the basis for many water softening compounds used in the laundry, household as well as industrial plants.

Diamond 58% Soda Ash is acknowledged as a standard of quality throughout industry. Whatever your process—whatever your requirements—you can depend on Diamond 58% Soda Ash to deliver satisfactory results time after time with unvarying uniformity. Let Diamond serve you during 1934.

DIAMOND ALKALI COMPANY, Pittsburgh and Everywhere

ALKALI

uncollectable loans should be small in comparison to the vast amount of inflation needed to bring about the production and consumption that will give the purchasing power to kill off the under-consumption that is now so effectively retarding business recovery. What losses did occur in such a vast use of the credit of the nation would have to be paid for by the people of the U. S. in an increased price of goods that must follow.

Some may say that such a policy anent inflation of currency as set down here would mean swift over-production. Would it? Have we not now the means of controlling the effects of such an extensive program of currency inflation through the NRA? Would not the shorter hours of production demanded under the codes of the NRA limit the use of inflation of currency for the purposes aimed at and thus interdict any serious over-production? Let us not forget that what we are suffering from now is not over-production but under-consumption created by the lack of consuming power of the idle millions.

In conclusion, this method of processing inflation of currency as explained here briefly has all the earmarks of doing a good job for the country in a real recovery to prosperity. It can supplement the work of the NRA in more ways than one and return to work the idle millions at a faster rate than can the program of the NRA.

Properly manipulated currency inflation can be made to increase production and consumption without injuring the purchasing power of the sound dollar, something quite impossible with other methods of currency inflation. All this is provided the currency inflation causes money to function in its true sphere—as the exchange medium for new goods and for new services of equal value.—Appeared in *Boston Business*, Nov. '33, p. 2. Mr. Paradis is editor, *Fibre and Fabric*.

Heavy Chemicals

"Wet" vs. "Dry" Phosphoric Production

Chemiker-Zeitung (Sept. 6, '33) contains a discussion of the "wet" and "dry" processes for production of phosphoric acid from calcium phosphate. In the wet process phosphate is decomposed by sulfuric and in the dry process, silica replaces sulfuric and furnaces may be heated either externally or by means of electrical resistance.

Chief drawback to the wet process is the solubility of calcium sulfate in the liquor. Nevertheless, it is possible to extract 95-98% of the phosphoric by modern decantation methods. This acid may still contain calcium sulfate, sulfuric, and other impurities, but these are without much significance if acid is to be used for fertilizers. But for many other purposes a much higher degree of purity is necessary, and dry process must then be adopted. Iron and aluminum are difficult to eliminate from acid solutions. Unless present in excessive amount they cause no trouble in the dry. In the U. S. dry process is generally carried out in one operation and the electric furnace is used. In Germany, there are usually 2 stages, and external heat is applied. In the former method, the vapors of phosphorus and carbon monoxide are burned in the upper part of the furnace, the phosphorus pentoxide being afterwards condensed in a separate chamber. In the 2 stage process, phosphorus is not burned until its vapor has been completely separated by condensation from other vapors, and the carbon monoxide is then available as fuel. In both methods, considerable difficulty is caused by the highly corrosive nature of the hot phosphorus pentoxide vapor. Electric furnace gives a much higher concentration of phosphorus and its oxide than the other furnace, but a one-stage process is not economical thermally. Electric furnace is not, however, so wel adapted to a 2-stage process, since yield of carbon monoxide is usually small, so that its heat of combustion cannot be utilized.

Several advantages are claimed for the externally heated furnace and the 2-stage process. Thus by eliminating air from the 1st chamber, a high temperature can be employed without any danger of forming obnoxious colloidal mist of phosphorus pentoxide vapor, which will neither dissolve readily nor condense completely without the application of the Cottrell high-tension discharge. Moreover, any loss which might arise from the adoption of an additional operation is much more than compensated by the elimination of the loss caused through corrosion of the silicate lining of the furnace by the hot phosphoric oxide.

While direct comparison of the 2 methods under comparable conditions is not available at present, Dr. Heinrich (the author) inclines to the view that the wet process is the more economical, whenever it can be usefully applied, although the product is apt to be less pure. On the other hand, since no steam is involved in the dry process, the latter can be adapted to the production of phosphoric of any desired concentration without the use of evaporation plant.

In a later issue of *Chemiker-Zeitung*, Dr. Ernest Karwat points out that ultimate advantage may be with the dry process if the air blast is enriched with oxygen. Work along these lines the author points out has been done in the U. S. and patented but the cost factor is very important.

Digest of Foreign Literature

A. V. Petrov (Ukrainian Chemical Journal, Aug., '33, p. 89) reports rate of settling of calcium carbonate suspended in 10% sodium hydroxide is 5 times greater in presence of 0.01% of starch. L. Tamise (Chimie et Industrie '33, 29, Spec. Number, p. 906) reports economies possible in ammonium nitrate manufacture by using heat of neutralization of the nitric and ammonia for the concentration of the ammonium nitrate solutions in stages of increasing vacuum, the steam being used for preheating the acid. Crystallization is carried on in vacuum, the heat of crystallization being used for drying. Material contains less than 0.5% water. J. Milbauer and J. Doskar, in the same magazine ('33, 29, Spec. Number, p. 784) report that calcium chromate is best produced by adding a solution containing 400-450 grams of anhydrous calcium chloride (per liter of water) and using a 16% excess to a cold saturated solution of sodium chromate. With heating considerable occlusion of sodium chloride and calcium chloride occurs. Use of calcium oxide is advised against. M. O. Charmandarian and K. I. Brodovitsch (Ukranian Chemical Journal, '33, Aug., p. 110) report that unsatisfactory yields of barium chloride are obtained when nascent chlorine is passed through suspensions of barium sulfide solutions at 85-95° C.; 10% yields by passing dry chlorine over barium sulfide at 150 C.; 50% yields by mixing nascent chlorine with hydrochloric or water; at 200° yields of 80-90% are obtained using nascent chlorine alone or together with hydrochloric. Yields of 99% are obtained by passing nascent chlorine through a 1-1 mixture of barium sulfate and carbon. Aluminum oxide is used as a catalyst at a temperature of 600°. Slightly lower yields are possible when hydrochloric acid gas is passed through barium sulfate for 3 hours at 800° or 1-hour at 1000°. M. O. Charmandarian and K. I. Brodovitsch (Ukranian Chemical Journal, '33, Aug., p. 49) show that vanadium pentoxide-zeolite catalysts in sulfuric production have their activity increased by additions of other oxides, notably—alumium oxide, ferric oxide, cobalt oxide, nickel oxide, uranium oxide, and lead oxide at 450°.

Production of Bordeaux Mixture

Bordeaux Mixture to be of the greatest value should beprepared from lime as pure as possible and non-carbonated. Copper sulfate employed should be of 98.90% purity. The milk of lime is prepared by covering the quicklime with a large quantity of water, and subsequently completing the dilution to the degree required. Copper sulfate solution is then added with good agitation. If the preparation is carried out in the reverse method, poor results are obtained. Efficiency of the Bordeaux Mixture varies from 20-90%, according to the time of application. Anticryptogamic treatment, utilizing copper compounds, should always be preventive to be effective. Once mildew has formed on the vines,

only the application of certain coloring matters is a positive remedy. M. Georges Truffaut before the 13th Congress of Industrial Chemistry.

Patents—Heavy Chemical

Water, thermal, pressure and chem-process for preparation of hydrogen. No. 1,935,675. W. L. Spalding, to Amer. Cyanamid Co., N. Y. City.

Zinc chloride parchmentizing of paper and metal salt lye to prepare vulcanized fiber. No. 1,935,692. E. Becker & K. Letters, to I. G. F., Frankfurt, Germany.

Raw fibers, as manila, sisal and ramie, after chlorine and hypochlorite pulped in sodium sulfite liquor. No. 1,935,728. Geo. A. Richter, to Brown Co., Berlin, N. H.

Sizing composition of animal glue or gelatine, and diatomaceous earth. No. 1,935,769. C. le B. d'Espinoy, Neuilly sur Seine, to M. C. Rorty, Lusby, Md.

To bring colloids in water solution to a state of maximum charge and cataphoretic velocity. No. 1,935,962. O. M. Urbain, Columbus, to C. H. Lewis, Harpster, Ohio.

Two processes for purification of polluted water-freezing from carboxylic acids and from oxygen consuming organic compounds. Nos. 1,935,963-4. O. M. Urbain, Columbus, to C. H. Lewis, Harpster, Ohio.

Acid mixture method of nitrating diethylene glycol. No. 1,936,020. Arthur Hough, Passaic, N. J.

Process for manufacturing potassium sulfate. No. 1,936,070. C. F. Ritchie & G. E. Warren, to Amer. Potash & Chem. Corp., Trona, Cal.

Freeing hydrochloric acid gas from arsenical impurities by use of activated carbon or bauxite silica gel and charcoal. No. 1,936,078. G. P. Adamson, to General Chem. Co., N. Y. City.

Sorbitol ethers—of a six carbon atom aliphatic hexahydric alcohol. No. 1, 936,093. W. E. Lawson to E. I. duPont & Co., Wilmington.

Hydrocyanic acid preservation of animal and vegetable substances. No. 1,936,123. R. Willstatter, Munich, Germany.

Paste protection for enameled surfaces—clay, zinc oxide and vegetable starch to stop formation of organic acids. No. 1,936,152. O. H. Bahr, Kohler, Wisc.

Method of producing diammonium phosphate. No. 1,936,168. M. Larsson, Berlin, to Kunstdunger-Patent-V.-A.-G., Glarus, Switzerland.

Albuminous treatment of sulfite liquors to free from sulfonic acids. No. 1,936,250. H. Limburg, Amstel, Netherlands, to Flintkote Corp., Boston.

Sulfonated esters of oleic acid, with good wetting, cleansing and emulsifying properties. No. 1,936,265. A. Reiner & J. Link, to Sandoz Chem. Works, Basel, Switzerland.

Production of tri-alkali phosphate from ferrophosphorus. No. 1,936,307. N. C. Lindberg, to Victor Chem. Wks., Chicago.

Calcium carbonate and borax, with three other elements of composite for coating welding rods. No. 1,936,349. A. C. Castle, to A. M. Castle & Co., Lake Forest, Ill.

Method for fermentation of glycerol. No. 1,936,497. W. H. Carothers, J. W. Hill and F. J. L. Van Natta, to E. I. du Pont & Co., Wilmington.

Reaction product of phosphoric acid with an ester from an alkylolamine and an organic from the fatty acids and oils, and natural resin acids. No. 1,936,533. H. O. Albrecht, Flint, to E. I. duPont & Co., Wilmington.

Chemically formed salts on surface of metallic catalyst, as one feature of preparation of the catalyst. No. 1,936,565. Original, Sept. '28. M. E. Barker, Edgewood, Md.

Method of preparing catalysts. No. 1,936,564, original Sept. '28. Maurice E. Barker, Edgewood, Md.

Formula for lubricant, of steam-refined paraffin and oleate and stearate of aluminum. No. 1,936,632. E. R. Lederer, Fort Worth, Tex.

Diphenylene oxide with a hydrocarbon oil as a lubricant. No. 1,936,670. A. Henriksen & B. H. Lincoln, to Cont'l Oil Co., Ponca City, Okla.

Terpene hydrocarbons and methyl furoate as agents for freeing carbon from a/combustion chambers and b/engine cylinders. Nos. 1,936,681-2. W. G. Lovell & T. A. Boyd, to General Motors Res. Corp., Detroit.

Chemical use of vegetable juices in composition for removing boiler scale. No. 1,936,714. D. W. Haering, Chicago.

Process for producing acid chlorides. No. 1,936,739. R. V. Townsend, to Pilot Labs., Arlington, N. J.

The concentration of aqueous aliphatic acids. No. 1,936,755. Henry Dreyfus, London, Eng.

Sodium carbonate-celestite ore method of making strontium carbonate. No. 1,936,806. O. L. Thomas, Maplewood, N. J., to Grasselli Chemical, Cleveland.

Process for leaded ammonium chloride crystals. No. 1,936,811. C. P. Weise, to Grasselli Chem. Co., Cleveland.

Process for making nickel sulfate. No. 1,936,829. H. P. Corson, to Grasselli Chem. Co., Cleveland.

Hot sulfuric-compressed air method of making cadmium sulfate. No. 1,936, 830. H. P. Corson, to Grasselli Chem. Co., Cleveland.

Process for making water-free ethyl alcohol. No. 1,936,836. A. Gorhan, to Deutsche G. und S. S. v. Roessler, Frankfort, Germany.

Calcium chloride method for barium salts. No. 1,936,849. A. P. Mertes, to Krebs Pigment & Color Corp., Newark, Del.

Recovery of ammonia from fuel gas. No. 1,936,864. F. W. Sperr, Ventnor, to The Koppers Co., Pittsburgh.

Ammonia oxidation catalyst. No. 1,936,936. M. F. Fogler, Solvay, to Atmos. Nitrogen Corp., N. Y. City.

Uninterrupted sulfur production from crude via hydrogen sulfide-sulfur dioxide washings. No. 1,936,959. K. von Szombathy, Dortmund, Germany.

Phosphorous and phosphoric acid esters. No. 1,936,985. W. Lommel & R. Engelhardt, to I. G. F., Frankfort, Germany.

Step in the creation of condensation products from acetylene and ammonia. No. 1,936,995. Leo Schlecht & H. Rotger, to I. G. F., Frankfort, Germany.

Process for titanium oxide of different particle size and fine texture. No. 1,937,037. M. L. Hanahan to Krebs Pigment & Color Corp., Newport, Del.

Chlorinating process in the manufacture of calcium hypochlorite. No. 1,937, 230. F. N. Kitchen, to Imp. Chem. Industries., Ltd., London.

Process for alkyl chlorides; phosphoric acid catalyst. No. 1,937,269. Paul Ernst, to Dr. A. Wacker Gess. fur Elek. Ind., Munich.

In the catalytic condensation of diacetone alcohol. No. 1,937,272. Henri Guinot, to Usines de Melle, France.

For the electrolytic oxidation of aldoses. No. 1,937,273. E. L. Helwig, Bristol, Pa., to Rohm Haas, Inc., Philadelphia.

Catalysts for conversion of primary alcohols, No. 1,937,284-5. J. Martin & I. J. Krchma, to Comm'l Solvents, Terre Haute, Indiana.

Metallic oxidation catalyst. No. 1,937,381. H. A. Bond & L. B. Smith, to E. I. duPont & Co., Wilmington.

In treating molten tin with chlorine, the production of anhydrous stannic chloride. No. 1,937,419. J. Wolf, Nice, & G. A. Favre, Lyon, Fr.

Lubricating compositions and their process. Nos. 1,937,462-3. E. A. Nill, to P. E. Selby, Inc., Cleveland.

Catalytic manganese dioxide. No. 1,937,488. L. G. Jenness, Brooklyn, to Intermetal Corp., N. Y.

For the manufacture of sulfonic acids or their salts. No. 1,937,521. H. Limburg, Amsterdam, to Flintkote Corp., Boston.

The oxidation of aldehyde to acetic acid in the liquid phase. No. 1,937,528. H. F. Oxley & W. H. Groombridge, Spondon, Eng., to Celanese Corp.

Permanently fusible and oil-soluble synthetic resin-glycerol, cracked rosin and linseed oil acids. No. 1,937,533. I. Rosenblum, Jackson Heights, N. Y. City.

Sodium hypochlorite method for thicker boiling starch. No. 1,937,543. A. P. Bryant, to Clinton Corn Syrup Ref. Co., Clinton, Ia.

Method of producing calcium hypochlorite. No. 1,937,613. M. Weber, Jr. to Mathieson Alkali Wks., N. Y. City.

H_2S method of converting zinc oxide to pigment. No. 1,937,639. N. C. Christensen, Salt Lake City.

Method of accelerating propionic fermentation. No. 1,937,672. J. M. Sherman, Ithaca, to The Wilbur White Chem. Co., Oswego.

The production of hydrogen peroxide from acid persulfate. No. 1,937,682. F. Boedecker & J. Seemann, Berlin, to E. I. duPont & Co., (½) and ½ to Buffalo Electro-Chem. Co., Buffalo.

Copper catalyst from a cuprammonium salt. No. 1,937,728. H. H. Storch to E. I. duPont & Co., Del.

Chlorine reaction production of dextrine from corn starch. No. 1,937,752. A. D. Fuller, to Nat'l Adhesives Corp., N. Y. City.

Improved sodium nitrate. No. 1,937,757. G. H. Gleason, Montclair, N. J. to Co. Salitrera Anglo-Chilena, Valparaiso.

Process for deodorizing industrial carbon dioxide. No. 1,937,832. Ralph H. McKee, Jersey City.

The making of sodium carbonate monohydrate. No. 1,937,937. Allen, Gale & Ritchie, to Amer. Potash & Chem. Corp., Trona, Cal.

Water soluble sulfide purification of sulfite liquors. No. 1,937,944. J. D. Butler, Baltimore, to Gen. Chem. Co., N. Y. City.

For making potassium aluminum fluoride. No. 1,937,956. A. H. Henninger, to Gen. Chem. Co., N. Y. City.

Related chemical processes for the separation and recovery of the constituents of sea water. No. 1,937,995. A. M. Thomsen, San Francisco.

Process for the production of alkali phosphates. No. 1,938,057. Baron von Girsewald & H. Weidmann, Frankfort, to Amer. Lurgi Corp., N. Y. City.

Yeast with fermenter to inhibit growth of undesirable organisms. No. 1,938, 081. E. A. Meyer, England, to Standard Brands, Del.

For production of isopropyl alcohol. No. 1,938,162. J. W. Woolcock, to Imp. Chem. Industries, London.

Hydrogen production—variations in catalysts. No. 1,938,202. R. Williams, to E. I. duPont & Co., Wilmington.

Aluminum chloride process for drying oils and resins, from pine extracts. No. 1,938,320. S. M. Cooper to Gulf Ref. Co., Pittsburgh.

Production of cyanogen chloride. No. 1,938,324. P. Dieterle, to National Aniline & Chem. Co., N. Y. City.

Anti-alkyl ether process in mfr. of aliphatic alcohols. No. 1,938,453. Wm. J. Hale, to The Dow Chem. Co., Midland, Mich.

Preparation of anhydrous iron chlorides. No. 1,938,461. C. F. Prutton, Cleveland, to Dow Chem. Co., Midland, Mich.

Shellac-like resins from agatho-copal resins. No. 1,938,468. J. Scheiber, Leipzig, to W. Dux, Hanover, Germany.

Sulfide method recovery of hydrocyanic acid from complex cyanides and waste liquors. No. 1,938,469. H. L. Sulman & H. F. K. Picard to The Gen. Eng. Co., Inc., London, Eng.—a corp. of Utah.

Odorless, non-sludging oil from polymerizing, condensing and oxidizing talloil. No. 1,938,532. R. H. Patch & F. Dambacher, to E. F. Houghton & Co., Phila.

Formula and process for hydrofluosilicic acid. No. 1,938,533. W. Penfield, to Penn. Salt Mfg. Co., Phila.

Thermic process for the production of phosphorus from phosphates. No. 1,938,557. S. D. Gooch & F. P. Kerschbaum, to Pembroke Chem. Corp., Pembroke, Fla.

Circulatory system for production of synthetic ammonia. No. 1,938,598. H. S. Loud, to Atmos. Nitrogen Corp., N. Y. City.

Tri-phenyl phosphate and tri-cresyl phosphate esters in manufacture of synthetic resins. No. 1,938,642. A. Runyan, to Sinclair Ref. Co., N. Y.

Production of inoffensive end-products from organic wastes. No. 1,938,647. G. H. Earp-Thomas, Glen Ridge, N. J.

Polymerized vinyl ester and one of four vegetable oils as coating composition. No. 1,938,662. W. E. Lawsom, to E. I. duPont & Co., Wilmington.

To render fibrous materials non-inflammable. No. 1,938,746. R. Engelhardt, to I. G. F., Frankfort, Germany.

Oxalic acid/benzoic acid on carbonate to form sound absorbent plaster for walls. No. 1,938,803. H. E. Brookby, to U. S. Gypsum Co., Chicago.

Olein-soap-cyclohexanol agent to render soluble in water, insoluble organic liquid compounds. No. 1,938,804. M. Burak, Berlin-Weissensee, Ger.

Polymerizing vinyl compounds, of three groups and mixtures. No. 1,938,870. L. C. Shriver, W. Va., to Carbide & Carbon Chem. Corp., N. Y.

Duplicator sheet of fusible, absorbent, aldehyde-proteid composition. No. 1,938,927. E. R. Nielson to Chas. H. Joy, Jr., Chicago.

Phosphate and a salt for retardation of rancidity in cereal foodstuffs. No. 1,938,999. Edwin Cox, to Phosphate Products Corp., Richmond, Va.

Coating composition for electron-emitting elements-alkali-earth metal salt and binder. No. 1,939,075. Leon McCulloch, to Westinghouse Elec. & Mfg. Co., Pa.

Impregnating stock with fireproofing salts and colloidal bituminous material, for fiber board. No. 1,939,082. R. G. Quinn, to Int'l Paper Co., N. Y. City.

For producing concentrated nitric acid. No. 1,939,162. Caro, Frank, Siebert, Wendlandt & Fischer, Piesteritz, Germany.

Aluminum sulfate method of preparing aluminum sulfostearate. No. 1,939, 169. Alexander Horwitz, N. Y. City.

Process for dioxane and its homologues, from sulfuric acting upon homologous glycols. No. 1,939,189. G. Steimmig & O. Hambsch, to I. G. F., Frankfort.

For manufacture methylene chloride and chloroform. No. 1,939,292. P. J. Carlisle, to E. I. duPont & Co., Wilmington.

Eliminating manganates in production of tri-alkali phosphates. No. 1,939, 305. George Klein, to Victor Chem. Wks., Chicago.

Process for paraphenylenediamine dipicrate. No. 1,939,365. Jean Piccard, to Hercules Powder Co., Wilmington.

Safety paper, by dehydration and later absorption of decolorized iodine, tannic acid, acetic acid in one continuous operation for a commercially dry product. No. 1,939,378. Frank S. Wood, to Inkset Safety Paper Co., Quincy, Mass.

Fine, dry, miscible sulfur. No. 1,939,403. A Nagelvoort, to Del. Chem. Engineering Co., Wilmington, Del.

Mixed polymerization products and their process. No. 1,939,422. Voss, Dickhauser & Starck, to I. G. F., Frankfort.

Pulpboard—emulsion from paraffin and saponified Montan wax into fiber. No. 1,939,616. H. L. Beecher, Trenton, to The Agasote Millboard Co., Ewing Township, N. J.

Method of accelerating oxidizable drying oil compositions. No. 1,939,622. H. A. Bruson, to Rohm & Haas Co., Phila.

Process for manufacture of potassium formate, from calcium formate and potassium sulfate. No. 1,930,625. Emil Hene to R. Koepp & Co., Rheingau, Germany.

Coal Tar Chemicals

Low Temperature Carbonization

Certain tars produced by low-temperature carbonization, it is reported in annual report, British Dept. of Scientific & Industrial Research, can be converted into motor fuel by a hydrogenation cracking process, with a yield of nearly 100% by volume with the elimination of tar and tar acids. Considerable progress has been made with the erection of a plant capable of dealing with 300 gals. of tar a day, designed to test commercial possibilities of this process. Pending completion, information regarding process is being obtained from work on small converters.

Experiments have also been carried out with tars from different coals carbonized at different temperatures, and it has been found that as the temperature of carbonization of the coal is increased, corresponding alteration in the quality of the tar produced decreases its suitability as a raw material for the hydrogenation-cracking process. In addition, the lower the oxygen content of the coal from which the tar is made, the more difficult becomes the treatment of that tar made at the higher temperatures of carbonization, although at lower temperatures of carbonization the difference between the tars from different coals is not so great. Report shows attention is now being devoted by the Board to coal products as possible raw materials for the chemical industry. Cresols from coal tar can be hydrogenated without pressure to produce toluol. Work on hydrogenation of coal itself is now being mainly directed to study of the constitution of coal and of the intermediate products formed during the process, rather than to its application as a means of producing motor fuel.

Improving Quality of Coke

Factors influencing hardness of coke produced from a given coal which are most readily controlled are: bulk-density of the charge and rate of heating the oven. Bulk-density of the charge in the oven is influenced by (a) size of coal, (b) its moisture content, and (c) method of charging oven. Each of these factors affects closeness of packing of coal particles in oven, and, in general, close packing discounts the weakly-swelling properties of the coal. Rate of heating oven may influence degree of swelling, for most coals are more strongly swelling the faster the rate of heating.

Quality of coke obtained from some weakly-swelling coals can often be considerably improved by adopting practice of top-charging ovens, instead of more usual cake-charging, and by increasing slightly rate of heating. If it is found that improvement in quality of coke can be effected in this way, a further improvement can be obtained by blending about 3% coke dust with the charge. Coals which cannot be coked successfully when top-charged, because they are too weakly-swelling, require presence of a certain proportion, about 20 or 30 per cent., of a strongly-swelling coal in the charge to enable them to yield a hard and non-abradable coke. Addition of about 3% of coke dust to such a blend is desirable. Method of treating weakly-swelling coals to improve quality of coke is to incorporate about 3 or 4% of coke-oven tar with the charge. Such a treatment also enables coal to be stored without deterioration to its coking properties. R. A. Mott & Prof. R. V. Wheeler, British Iron & Steel Institute.

Patents—Coal Tar

Process for coloring materials, organic substitution derivatives of cellulose. No. 1,935,623. Ellis, Mosby & Olpin, Spondon, England, to Celanese Corp., N. Y. Appl. 1928.

Process for making new azo dyestuffs. No. 1,935,624. Ellis, Olpin & Mosby, Spondon, Eng., to Celanese Corp., N. Y. 30 claims: Appl. 1930.

Chlorinating aromatic hydrocarbons. No. 1,935,648. J. S. Mares, to Monsanto Chem. Co., St. Louis.

Azo dyestuffs and the application thereof. No. 1,935,657. Mosby, Olpin & Ellis, Spondon, Eng., to Celanese Corp., N. Y.

Ketone hydrazones and their process. No. 1,935,712. E. Herdieckerhoff & F. Ballauf, Germany, to General Aniline Wks., N. Y. City.

Vat dyestuffs of good fastness—halogenated dibenzpyrene—quinones. No. 1,935,720. Kraenlein, Vollmann & Becker, Germany, to General Aniline Wks., N. Y. City.

Red to green solutions and violet to blue vats in dyes from nitrogenous compounds of perylene-quinone. No. 1,935,721. Kunz and Koberle, to General Aniline Wks., N. Y. City.

Vat Dyestuffs of the anthraquinone acridine series. No. 1,935,724. H. Neresheimer, Ger., to General Aniline Wks., N. Y. City.

Disymmetric phenyl-amino, azinic dyes, and their preparation. No. 1,935,849. R. Lantz, & A. Wahl, one-half assigned to Ste Anon. des Matieres C. & P. chemiques, Saint-Denis, France.

Weakly colored dyes, soluble in diluted alkali-lyes; alpha-hydroxyanthrone derivatives. No. 1,935,928. K. Zahn, and H. Schlichenmaier, to General Aniline Wks., N. Y. City.

Dyestuffs for animal fiber, of the anthraquinone series. No. 1,935,929. K. Zahn, and H. Koch, to General Aniline Wks., N. Y. City.

Yellow dyes, in caustic soda solution, of hydroxynaphthoic acid arylides. No. 1,935,930. Zitscher, Morschel and Luce, to General Aniline Wks., N. Y. City.

Yellow crystals from benzanthrone aldehydes, as oxidation of aromatic compounds. No. 1,935,949. F. Kacer, Mannheim, to General Aniline Wks., N. Y. City.

Preparation of 1-arylamino-2-methyl-anthraquinones. No. 1,936,077. A. J. Wuertz, to E. I. du Pont Co., Wilmington.

Red dyestuffs for wool and silk, high fastness, monoazo. No. 1,936,266. B. Richard, to J. R. Geigy S. A., Basel, Switzerland.

Disulfuric acid ester. No. 1,936,474. D. A. W. Fairweather & J. Thomas, to Scottish Dyes, Grangemouth, Scotland.

Purifying trinitrotoluene by recrystallizing from solution. No. 1,936,607. W. R. Rinkenbach, Dover, N. J.

Nitrogenous dyestuffs, bluish-violet-to gray. No. 1,936,716. E. Honold, Frankfort, to General Aniline Wks., N. Y. City.

Ortho-nitro-phenyl-sulfones. No. 1,936,721. H. Landers, Frankfort, to General Aniline Wks., N. Y. City.

Arylamino derivative dyestuffs, of intense coloration with ferric chloride. No. 1,936,722. L. Laska & O. Haller, Offenbach, to General Aniline Wks., N. Y. City.

Dyes of high affinity for vegetable fiber-hydroxycarboxylic acid arylides. No. 1,936,926. K. Zahn & H. Koch, to General Aniline Wks., N. Y. City.

Acid dyestuffs of the anthraquinone series. No. 1,936,944. G. Kraenzlein & E. Diefenbach, to General Aniline Wks., N. Y. City.

Condensation dyes of the anthraquinone series. No. 1,936,948. P. Nawiasky & B. Stein, to General Aniline Wks., N. Y. City.

Yellow to brown vat dyestuffs. No. 1,936,949. P. Nawiasky, E. Krauch & B. Stein, to General Aniline Wks., N. Y. City.

Azo dyestuffs, fast, insoluble in alkali solutions. No. 1,936,979. Hoffa and Glietenberg, Cologne, to General Aniline Wks., N. Y. City.

Artificial resins from olefine benzenes or naphthalenes, and ketones. No. 1,937,063. Meisenberg, Bock & Bachle, to I. G. F., Frankfort, Germany.

Halogenated pyridinoanthraquinones; yellow to orange red. No. 1,937,154. Kunz, Koeberle & Kochendoerfer, Germany, to General Aniline Wks., N. Y. City.

Water-insoluble azo dyestuffs—orange, red, blue, black. No. 1,937,181. A. Zitscher, Offenbach, to General Aniline Wks., N. Y. City.

Step in production of carbamic acid chloride. No. 1,937,328. T. Theis, to I. G. F., Frankfort, Germany.

Distillation of benzoic acid from mixture of benzoic and phthalic, with a reagent. No. 1,937,383. Courtney Conover, to Monsanto Chem. Co., St. Louis.

Process for para-hydroxy-benzoic acid. No. 1,937,477. L. E. Mills & W. W. Allen, to The Dow Chem. Co., Midland, Mich.

Production of anthraquinone dyestuffs. No. 1,937,531. D. G. Rogers, J. Ogilvie & J. H. Cromwell, Buffalo, to National Aniline & Chem., N. Y. City.

Dyestuff and intermediate production from phthalic anhydride and dibenzanthrone. No. 1,937,718. C. Shaw & J. Thomas, to Scottish Dyes, Grangemouth, Scotland.

Preservative compound—gelatine and wood creosote. No. 1,937,813. H. Deitchman, Chicago.

Process for removing phenolic bodies from liquors containing them. No. 1,937,941. C. E. Braun, Burlington, Vt., to The Barrett Co., N. Y. City.

Azodyestuffs, dark blue to bluish black. No. 1,938,012. E. Fellmer, Ger., to General Aniline Wks., N. Y. City.

Green dyestuffs of the diphenyl-naphthylmethane series. No. 1,938,014. B. Francke, to General Aniline Wks., N. Y. City.

Aminoanthraquinone-nitriles. No. 1,938,029. M. Kugel, to General Aniline Wks., N. Y. City.

Meta-hydroxyl-phenyl-arylamino carboxylic acid. No. 1,938,031. L. Laska & O. Haller, to General Aniline Wks., N. Y. City.

Greenish, red and lake dyes, of the anthraquinone series. No. 1,938,043. H. Scheyer, Frankfort, to General Aniline Wks., N. Y. City.

Hydroxy-thionaphthene compound. No. 1,938,053. N. Steiger & W. Brunner, Frankfort, to General Aniline Wks., N. Y. City.

Indigoid dyestuff. No. 1,938,054. N. Steiger & W. Brunner, Frankfort, to General Aniline Wks., N. Y. City.

Isatine compound. No. 1,938,055. N. Steiger & W. Brunner, Frankfort, to General Aniline Wks., N. Y. City.

Derivatives of the benzanthrone-pyrazolanthrone series. No. 1,938,059. K. Wilke & F. Schubert, to General Aniline Wks., N. Y. City.

For the production of valuable hydrocarbons from liquid carbonaceous material. No. 1,938,086. M. Pier, Heidelberg, to I. G. F., Frankfort, Germany.

Trisazo dyestuff. No. 1,938,182. H. Jordan & H. E. Woodward, to E. I. du Pont & Co., Wilmington.

For addition products of the pyridine series. No. 1,938,253. M. Hartmann & M. Seiberth, to Ste. of Chemical Industry, Basel, Switzerland.

The production of diphenyl from benzene. No. 1,938,609. J. H. Reilly, to The Dow Chem. Co., Midland, Mich.

For making an anilide of 2.3-hydroxy-naphthoic acid. No. 1,938,902. E. F. Grether & L. E. Mills, to The Dow Chem. Co., Midland, Mich.

Substituted mono-halogenated phenols. Nos. 1,938,911-912. Emil Klarmann and L. W. Gates, to Lehn & Fink, Inc., Bloomfield, N. J.

Phenol-impregnated kraft paper as composite insulating material. No. 1,938,917. E. C. Loetscher, Dubuque, Ia.

Production of green sulfur dyes. No. 1,938,963. R. W. Hess & M. H. Fleysher, to National Aniline & Chem. Co., N. Y. City.

New condensation product, of a carbohydrate (phthalic anhydride), an aromatic hydrocarbon and sulfuric acid. No. 1,938,966. A. O. Jaeger, to The Selden Co., Pittsburgh.

Fast violet to blue shades from polyazo dyestuffs. No. 1,938,976. R. B. Payne, Elma, N. Y., to National Aniline & Chem. Co., N. Y. City.

Yellow to bluish-red anthraquinone series vat dyestuffs. No. 1,938,993. O. Bayer, Frankfort, to General Aniline Wks., Inc., N. Y. City.

Production of aldehydes. No. 1,939,005. F. W. Guthke, Germany, to General Aniline Wks., Inc., N. Y. City.

Fast blue sulfur dyestuffs. No. 1,939,008. R. Herz & W. Hechtenberg, Frankfort, to General Aniline Wks., Inc., N. Y. City.

For vat dyestuffs of the acridone series. No. 1,939,011. Kunz, Koeberle & Hensle, Germany, to General Aniline Wks., Inc., N. Y. City.

To prepare dibenzoxacarbocyanine dyes. No. 1,939,201. Leslie G. S. Brooker, to Eastman Kodak Co., Rochester.

Dyestuff intermediates—ortho-aminoaryl-alkyl (and aralkyl-) sulfones. No. 1,939,416. K. Schimmelschmidt & H. Thomae, Frankfort, to General Aniline Wks., Inc., N. Y. City.

Sulfuric acid elimination of catalyzer poisons in purifying phenol. No. 1,939,591. C. O. Henke to E. I. du Pont & Co., Wilmington.

Dyestuff for cellulose acetate silk. No. 1,939,593. H. R. Lee & E. C. Buxbaum, to E. I. du Pont & Co., Wilmington.

Resinous basic salt of aroyl-benzoic acids—soluble in toluene when anhydrous. No. 1,939,621. H. A. Bruson, to The Resinous Prod. & Chem. Co., Phila.

Petroleum

Design and Maintenance of Cracking Plants

Bureau of Mines' report (Supt. of Documents, Technical Paper 551, 104) outlines safety factors which influence design of cracking equipment, operation and inspection and maintenance. Cracking process has been attended by many fires and failures of equipment. Safety of any manufacturing process handling highly inflammable liquids and gases under high temperatures and pressures depends not only upon safe design and operation but also upon degree of fire protection that has been incorporated in the design and construction of the processing equipment and the extent of the fire-fighting facilities provided. This study of safety at petroleum cracking plants shows that fire protection depends upon safe design and arrangement of cracking equipment, organization and instruction of the operating personnel in fire-fighting activities, and the location and maintenance of adequate fire-fighting and accessory equipment at strategic places about the refinery.

No attempt is made to tell how to design and build, but major factors which influence design from the safety standpoint are indicated. (1) influence of high temperature on strength of the metals, (2) influence of corrosion and erosion in reducing wall thickness of pressure equipment, and (3) influence of shape and stress distribution on the safety of pressure vessels.

Factors of safe operation are (1) excluding water from cracking system, (2) detection and proper handling of toxic and inflammable gases and vapors, (3) eliminating unnecessary sources of ignition, (4) freeing and cracking system of explosive mixtures or toxic vapors before cleaning and repair work is undertaken, and purging system of air before cracking operations are resumed, and (5) maintaining an adequate and safe system for disposal of refinery wastes.

Cracking is accompanied by severe corrosive and erosive conditions which continually weaken cracking equipment and add to the dangers. Extent of these weakening effects should be determined at regular intervals by trained inspectors. Various methods of inspection are described. These include internal and external visual inspection, drill testing, use of "tell-tale" test holes, calipering, and other measurements, made without drill testing, such as hammer testing, tight-wire-measuring apparatus, X-ray, stethoscope, and hydrostatic pressure testing. Of particular interest is method of determining wall thickness of reaction chambers by means of a tight-wire measuring apparatus, described in the paper.

Patents—Petroleum

Process for green petroleum sulfonic acids. No. 1,935,666. K. S. Ramayya, to I. Sonneborn Sons, Inc., N. Y.

Absorbent clay dehydrating, with all steps in process for de-sulfurizing petroleum distillates. No. 1,935,725. J. Perl & R. Schuhmann, to Union Oil Co., Los Angeles.

Oil free hydrocarbon wax. No. 1,937,518. Henderson, Ferris and Cowles, to Atlantic Refining Co., Phila.

Desulfurizing hydrocarbon oils by vapor contact with sodamide. No. 1,937,914. Herman Pines, to Universal Oil Prod. Co., Chicago.

Solvent hydrocarbon liquid washing mixture for separation of rich hydrogen. No. 1,938,087. M. Pier & E. Donath, Germany, to Standard-I. G. Co., Linden, N. J.

For removing a/odors and b/injurious ingredients from petroleum distillates. Nos. 1,938,116-7. Applied 1929. W. A. Smith, Hamburg, N. Y.

Process for preparing alkyl hypohalites. No. 1,938,175. R. M. Deanesley, to Shell Dev. Co., San Francisco.

For producing secondary alcohols. No. 1,938,177. W. Engs & R. Z. Moravec, to Shell Dev. Co., San Francisco.

For hydrolyzing acid esters from olefines in a polybasic mineral acid. No. 1,938,178. W. Engs & R. Z. Moravec, to Shell Dev. Co., San Francisco.

Amino-phenol preventive of gum formation in cracked petroleum distillates. No. 1,938,456. H. P. Lankelma, to Standard Oil Co., Cleveland.

In mineral oil distillation a process for the naphthenic acid soap-containing oily residues. No. 1,938,513. Brunck, Kreutzer & Boeck, to Deutsche, Gasoline A.-G., Berlin.

Carbon-phosphorus-arsenic catalyst and the destructive hydrogenation of carbonaceous materials. No. 1,938,542. M. Pier & W. Simon, Germany, to Standard-I. G. Co., Linden, N. J.

Methyl acetate in de-waxing hydrocarbon oils. No. 1,938,545. F. W. Sullivan, Jr., to Standard Oil Co., Chicago.

Sulfuric acid process for refining residual hydrocarbon oil. No. 1,938,629. J. Kochan, to Standard Oil Co., Whiting, Ind.

Colloidal suspensions method of desulfurizing hydrocarbon oils. Nos. 1,938,670-671. F. W. Sullivan, Jr., & A. B. Brown, to Standard Oil Co., Whiting, Ind. Also No. 1,938,672, R. R. Ruthruff, to same assignee.

Patents—Fine Chemicals

Cyanine dyes and their process. No. 1,935,696. L. G. S. Brooker, to Eastman Kodak Co., Rochester.

To counteract diseases of protozoa, methoxy-hydroxy-amino benzene arsonic acid. No. 1,935,960. Streitwolf, Fehrle and Hilmer, Germany, to Winthrop Chem. Co., N. Y. City.

An amino aralkylaryl carboxylic acid substance. No. 1,936,090. A. O. Jaeger, to The Selden Co., Pittsburgh.

Heating keto aromatic acids until carbon dioxide evolution ends and aryl ketones form. No. 1,936,091. A. O. Jaeger, to The Selden Co., Pittsburgh.

Stable aqueous solution of magnesium citrate. No. 1,936,364. R. Pasternack & C. P. Ammermann, to Charles Pfizer & Co., Brooklyn.

Detoxicant, therapeutic compound of sodium ricinoleate. No. 1,936,456. W. P. Larson & M. Bye, to The Wm. S. Merrell Co., Cincinnati.

Process for manufacture of substituted pyrazolones. No. 1,936,488. Hans Stenzl, Basel, to Hoffmann-LaRoche Inc., Nutley, N. J.

As therapeutic substances, nitrogen containing compounds of the pyridine and quinoline series. No. 1,936,547. M. Brockmuhl & G. Ehrhart, Frankfort, to Winthrop Chem. Co., N. Y. City.

For the preparation of pure iodine. No. 1,936,553. C. W. Jones, Shreveport, to Jones Chem. Co., McDade, La.

High gravity esters from castor oil. No. 1,936,831. C. R. Del-Turco, Paris, one-half to French Ste. Legendre Vin & Guetet, Paris.

Therapeutic product, contra pernicious anaemia. No. 1,937,133. E. A. Sharp & C. C. Sturgis, to The Regents of the University of Michigan.

Eliminating non-vitaminic substances from aqueous vitamin solutions. No. 1,937,671. A. Seidell, Washington, D. C.

Oxidation of side chain aromatic compounds. No. 1,937,962. A. O. Jaeger, to The Selden Co., Pittsburgh.

Aralkylaryl carboxylic acid. No. 1,937,963. A. O. Jaeger & L. C. Daniels, to The Selden Co., Pittsburgh.

Esters of the carbohydrates. No. 1,938,044. A. Schmidt, G. Balle & H. Lange, to I. G. F., Frankfort, Germany.

Soluble yellowish oils, therapeutic, quinoline derivatives. No. 1,938,047. F. Schonhofer & H. Andersag, to Winthrop Chem. Co. Inc., N. Y. City.

For salts of organic acids from albuminoids and the like. No. 1,938,512. K. Bromig, Frankfort, Germany.

Esterification product from polyhydric alcohol group, monohydric alcohol group and a polybasic acid. No. 1,938,791. W. C. Arsem, Schenectady, N. Y.

For styrols from alkyl benzol. No. 1,938,827. W. A. Gibbons, Montclair, & O. H. Smith, West Englewood, to Naugatuck Chem. Co., Naugatuck, Conn.

A new compound, an imide of a ketone. No. 1,938,890. E. C. Britton & F. Bryner, to The Dow Chem. Co., Midland, Mich.

Arylide of hydroxy aromatic acids. No. 1,938,901. E. F. Grether, to The Dow Chem. Co., Midland, Mich.

Aromatic amino-sulfo chlorides. No. 1,939,025. H. Schweitzer & K. Burr, to I. G. F., Frankfort, Germany.

Continuous production of esters of ethyl alcohol. No. 1,939,116. O. Fuchs, to Firm of Roessler (Deutsche Gold und Silber), Frankfort.

Soap base with lipoid, as medicament for intestinal tract. No. 1,939,166. L. G. Hadjopoulos, N. Y., to Monsanto Chem. Co., St. Louis.

Transforming dicarboxylic acids to monocarboxylic acids. No. 1,939,212. A. O. Jaeger, to The Selden Co., Pittsburgh.

To manufacture an alkyl halide and a carboxylic acid anhydride. No. 1,939,216. L. P. Kyrides, to Monsanto Chem. Co., St. Louis.

Mixed alkyl phenyl ester of a dicarboxylic acid. No. 1,939,217. L. P. Kyrides, to Monsanto Chem. Co., St. Louis.

Acylamino-anthraquinones, hydrolyzed to remove only arylsulfonyl groups. No. 1,939,218. R. J. Loveluck & J. Thomas, Grangemouth, to Imp. Chem. Industries, Ltd., London.

Ethylene dichloride process for dehydrating propionic acid. No. 1,939,237. H. G. Stone, to Eastman Kodak Co., Rochester.

Process for aromatic hydroxy aldehydes, from heating substituted phenol in alkaline solution. No. 1,939,491. Franz Elger, Basel, to Hoffman-LaRoche Inc., Nutley, N. J.

Patents—Agricultural Chemicals

Improvement in the process for the synthesis of urea. No. 1,937,116. H. C. Hetherington, to E. I. du Pont & Co., Wilmington.

Castor oil esters as emulsifiers and insecticide. No. 1,937,969. Hugh Knight, Cal., to Emulsoids Inc., N. Y. City.

Urea-heavy metal salt to form disinfectant. No. 1,938,585. W. L. Estabrooke, Yonkers, N. Y.

Mercury compound seed disinfectant, with acid radicle from group of 9. No. 1,938,839. M. S. Kharasch, Chicago, to E. I. du Pont & Co., Wilmington.

Insecticidal emulsion of copper salt of lecithin. No. 1,938,864. B. Rewald, to Hanseatische Muhlenwerke A. G., Hamburg, Germany.

Ammonium nitrate and sulfate salts in fertilizer capable of being stored and scattered. No. 1,939,165. W. Eissner, to I. G. F., Frankfort, Germany.

Dissolving phosphate rock in nitric acid, and separating its content of lime and phosphoric acid. No. 1,939,351. Erling Johnson, to Odda Smelteverk A/S, Odda, Norway.

New Glue Process

Farben Zeitung (Nov. 4, '33) reports new German process for producing high grade glue from dried bones. It involves immersion in baths of certain acids or acid salts which possess a hydrogen ion concentration either above or below that corresponding to the iso-electric point for collagen. Exposure to solutions fulfilling these conditions appears to result in re-hydration of the bone substance without any deterioration in quality. Upper limit of hydrogen ion concentration in accordance with the process is 7, while at the other end of the scale a pH of 4.7 to 5.0 is said to give satisfactory results. Process is based on fact that glue or collagen exhibit the least tendency to hydration when at the iso-electric point. It is pointed out that use of dilute baths in present process renders it entirely distinct from earlier processes for the treatment of bones with acid or salt solutions.

Plant Laboratory

Accuracy of Coal and Coke Analysis

Fuel Research Paper 29 (British Dept. of Scientific & Industrial Research) H. M. Stationary Office, London, England, 9d. net., is an investigation of routine analytical determinations on coal and coke and the accuracy of such tests.

Accuracy in sampling and in analyzing coal and coke is of great importance, although from the nature of the substances difficult of attainment. Coal is a highly complex in chemical and physical characteristics. High efficiency only to be achieved, in coal, by careful selection. Only satisfactory basis on which coal can be bought and sold is partly its chemical constitution and, more especially, its heat giving power, as determined in the laboratory. Metallurgical coke requirements of the consumer are equally explicit, although tending more to the physical than to chemical composition.

Every step should be taken to assist the chemist judging degree of accuracy. Reliance on data obtained in the laboratory depends to a larger degree, however, on accuracy of sampling. When it is realized that sampling coal and coke is in itself a very difficult problem, it will be seen that the whole question moves in a vicious circle.

To investigate influence of any sampling errors which may have occurred, a series of 64 repeat determinations were carried out on samples of pure chemical compounds, such as saccharose, phenacetin, and medicinal paraffin, in which no sampling errors could arise. Results obtained were compared with those for coal. Routine determinations on coke were dealt with in a similar way, one representative sample being divided into 64 laboratory samples on which repeat determinations were carried out. Results were tabulated and examined mathematically as before. Report also discusses the degree of accuracy to be expected in laboratory work on coal and coke, not only with one worker in one laboratory, but, supported by figures obtained in the course of routine work at the Fuel Research Station and elsewhere, as between different laboratories.

I. G.'s New Degreasing Agent

I. G. is introducing "Siliron" an industrial degreasing agent of a sodium phosphate type. It froths less, it is reported, than products of the P_3 (triphosphate) class.

New Equipment

New Line of Tank Jacks

Century Foundry, 3727 Market Boulevard, St. Louis, announces a line of tank jacks, specially designed for brewery or milk plant tanks. Tank is supported on the ball ended screw which fits into socket flanges fastened to the tank. Tanks are easily leveled, compensating for irregular floor supports. Jacks are of cast iron with steel screws and are available in several heights and base diameters to suit different requirements. Screw is arranged to turn with either bar or wrench.

Non-inflammable Capacitor

A totally enclosed non-inflammable capacitor has been announced by G. E. Company for use in dusty atmospheres. Dust-tight capacitor is intended not only for plants such as grain mills where dust is prevalent but has proved in demand for textile mills where lint has been troublesome in the past. This new capacitor is treated and filled with Pyranol which is non-inflammable and which has extraordinary insulating and dielectric properties. In addition, this material has made possible a capacitor of smaller size and weight, which is of particular advantage in many applications. Capacitor dielectric itself is hermatically sealed, and connections are brought out through bushings into a dust-tight box which surmounts the unit. Dust-tight box is provided with conduit holes, each fitted with a dust cap, and contains standard N. E. C. indicating fuses which can be inspected by removing the gasketted cover. This process is very simple since the cover is held in place by two wing nuts mounted on hinged studs. Use of individual indicating fuses is a feature of all G. E. capacitors.

Equipment Personnel

F. W. Young, formerly of Filtration Engineers, Inc., and more recently of Pulp Filter, has joined sales staff of Oliver United Filters Inc., N. Y. City, Chicago, San Francisco, Toronto. Croll-Reynolds Co., N. Y. City, announces that arrangements have been completed for F. M. deBeers, former president of Swenson Evaporator, to handle its chemical engineering equipment in the Middlewest. Mr. deBeers will retain his headquarters at 20 North Wacker Drive, Chicago, Ill., and will also continue to represent Leader Industries. Croll-Reynolds, reports at this time that '33 sales of their steam jet Evactors for chemical process work and vacuum refrigeration have exceeded those in any other of the 15 years since they started manufacturing this equipment.

U. S. Stoneware has appointed The Merrill Co., 343 Sansome st., San Francisco, representative in the San Francisco territory on the company's line of chemical stoneware and corrosion-proof equipment.

Equipment Booklets

E54. Brown Instrument, Philadelphia. A 6 page folder showing how a number of companies have dealt depression a healthy blow by using Brown control and measuring instruments for economy.

E55. Carbondale Machine Co., Carbondale, Pa. Bulletin covers thoroughly—both pictorially and descriptively—details of Carbondale Compressor as applied to Combined Units. Up-to-date details such as tapered roller bearing, strip plate inertia valves, cooke seal packing, and other modern improvements are featured. An exceptionally large and clear cross-sectional view of the entire compressor is included. Tables of pipe connections and overall dimensions are given, also a number of photographs of units completely assembled, and installed.

E56. Goodyear Tire & Rubber, Akron. The Story of The Tire is a 8 page booklet, profusely illustrated which gives in easily understood language the essential story of how tires are made.

E57. Linde Air Products, 30 E. 42 st., N. Y. City. Oxy-Acetylene Tips for December features the story of welding at Boulder Dam and several other important feature articles on the general theme of welding.

E58. Paasch Airbrush Co., 1909 Diversey Parkway, Chicago. A new leaflet describes in detail new multicolor airbrushes.

E59. Raymond Bros. Impact Pulverizer, 1302 N. Branch st., Chicago. An 8 page leaflet describes in detail Raymond screen mills and their special characteristics.

E60. John Robertson Co., (presses and heavy equipment) *Robinson Reminders* for December describes several of the latest installations of Robertson presses.

E61. F. J. Stokes Machine, Tabor Road, Olney P. O., Philadelphia. A new 44 page book, attractively printed in 2 colors, describing the company's line of tablet making machines and pharmaceutical and chemical equipment. This catalog, 8½ x 11 inches in size so that it fits the stock filing cabinet, describes the expanded advisory laboratory service now offered by this company to tablet manufacturers as well as their single punch and rotary model tablet machines, and auxiliary equipment such as counters, sifters and mixers, granulating mixers, oscillating granulators, drying closets, drug mills, coating pans, and polishing machines. Stokes dryers, molds, kettles, capsule machinery, vacuum apparatus, water stills and special process equipment are also covered. The book is effectively illustrated not only with cuts of the machines themselves, but with interesting installation views showing the wide variety of fields in which tablet machines are now being used.

E62. Surface Combustion, Toledo. This month's 4 page leaflet describes special controlled atmosphere furnaces.

E63. Tube-Turns, 1300 S. Shelby st., Louisville, Ky. Bulletin 51-1 contains descriptive information and dimensional data on the complete line of thin gauge copper TUBE-TURNS, elbows and return (180) type fittings, for use in distillery and brewery process lines, put out by this company.

E64. Wilson & Bennett Mfg., 6532 Menard ave., Chicago. A 2 page leaflet describes the revolutionary properties of a new full removable head barrel.

Chemical Industries,
25 Spruce Street,
New York City.

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Plant Management

Uniform Cost Accounting

As a means of combating unsatisfactory conditions that have arisen out of uncontrolled price competition and excessive price-cutting, executives are giving serious consideration to the need for some plan of uniform cost-accounting and reporting specifically adapted to the problems of their trade and industry. The Policyholders Service Bureau of the Metropolitan Life Insurance Co. has prepared a report on the subject, entitled *Uniform Cost Activities in Trade and Industry*. It is the result of a review of the uniform cost experiences of more than 76 trade associations and sets forth, as well, the opinions and ideas of a number of responsible executives in a wide variety of industries.

Number of chemical and allied associations were contacted including, American Drug Mfrs. Association, Insecticide & Disinfectant Mfrs. Association, Lime Association, National Fertilizer Association and others.

Procedures entailed in administering uniform cost activities and methods of preparing uniform cost accounting manuals are discussed. Copies are available for readers of this publication. Requests may be addressed direct to Policyholders Service Bureau, Metropolitan Life Insurance Co., 1 Madison ave., N. Y. City.

Plant Equipment

Chemical and Physical Properties of Lead

Lead corrosion-resisting powers depend primarily on its chemical composition. Good chemical lead contains not more than 0.01% of total impurities, and the limits for the individual impurities are as follows:—

Silver	0.002 %
Bismuth	0.005 "
Iron	0.003 "
Antimony	0.004 "
Zinc	0.002 "
Copper	0.001 "
Nickel and Cobalt	0.001 "
Tin, Cadmium, Arsenic	traces

There is at present no reliable, rapid, corrosion-test for lead. So-called "flash point test" is unsatisfactory and may be positively misleading. Aqua regia test appears to be equally unreliable. But it is possible to obtain valuable information on the purity of lead, and hence on its quality, by means of the tests described in any book on testing the purity of analytical reagents, that of Hopkin and Williams for example. These tests are rapid and useful, especially if the sample is compared with a lead known to be good, and treated in the same way.

If impurities are to be determined, rapid methods are available for antimony, arsenic, tin, bismuth. Copper and iron can be estimated in lead by easy adaptations of well-known procedure. Methods are available for complete analysis of lead, but they are lengthy and expensive. The quartz spectograph may be useful.

The most important physical properties of lead are the elastic limit, fatigue limit and creep limit.

Elastic Limit—This has been given values ranging from 100 lb. to 284 lb. per sq. in. Lower figure is safer; in fact, it is possible that lead has no elastic limit.

Fatigue Limit—This has been determined by the cantilever, the rotating beam, and the Haig machines. Probably the most useful figure is that determined on the Haigh machine, namely $\pm$ 0.2 ton per sq. in. At 100° C. fatigue limit is $\pm$ 0.16 ton, and at 150° C. it is about $\pm$ 0.1 ton per sq. in. It is interesting to note that oxygen plays a part in producing fatigue, for if the atmosphere be excluded by coating the lead with oil or similar material, the onset of fatigue is delayed.

Lead when fatigued undergoes intercrystalline cracking of unmistakable appearance. For practical purposes remedy is to work at as low a temperature as possible, to avoid changes of temperature, to eliminate vibration, and to support the lead as completely as possible. It should be remembered that even slight vibration, acting for a sufficient length of time, will produce fatigue in lead.

Creep Limit—One authority says that no absolute limit can be found, as even 150 lb. per sq. in. will give slight continuous creep. Another claims that lead will stand a load in tension of 415-690 lb. per sq. in. indefinitely. Undoubtedly lower figure is the more nearly correct.

Differences found in the creep and the elastic limits may be due partly to differences in the method of measurement and partly to differences in composition. It seems likely that minute amounts of impurities, usually considered insignificant, can modify the properties of lead to an appreciable extent. The purer the lead the more gently it should be treated.

Those alloys containing—(a) copper, and (b) tellurium are the most promising. Lead containing 0.06% copper is not much stronger than lead, as its ultimate tensile strength is 1.18 ton per sq. in. (lead 0.98 ton) and its fatigue limit is $\pm$ 0.28 ton per sq. in. (lead $\pm$ 0.2 ton). But its corrosion resistance in sulfuric and nitrous vitriol seems to be excellent, for the reason that the copper causes the lead to form on its surface a coherent, impermeable layer of lead sulfate, which acts as a paint or enamel, and prevents further contact between the lead and the corroding medium. Author has observed this result in coppered lead in contact with nitrous vitriol at 90-100°C., and similar results have been obtained in Germany. Results of recent tests on lead-tellurium alloys indicate that these alloys will be extremely valuable. Many other lead alloys have been tried, but none is so promising as the 2 mentioned above.—Summary of lecture by R. S. Russell delivered before Chem. Eng. Group, Victorian Branch, Australian Chemical Institute, and summarized in *Chem. Eng. & Mining Journal* (Aust).

New Oil Recovery Process

A new Swiss process for oil recovery is reported in foreign papers. Heretofore, accumulation of large quantities of spent bleaching clay constituted a serious handicap for the vegetable and mineral oil, fat and wax trade. Danger of spontaneous ignition arising from prolonged storage made the rapid recovery of oil and fat from spent bleaching clay a matter of considerable importance, especially as bleaching clay saturated with oil could only be sold at a very low price. Methods for extraction of the oil and fat contained in the spent clay after evacuation from the filter presses have been in existence for some time either by means of volatile solvent treatment or by extraction under pressure in autoclaves with or without an admixture of lye or soda. These methods had serious drawbacks, largely of expense but including excessive steam consumption and the nuisance of unpleasant gases. In the new process treatment takes place under atmospheric pressure in an open vessel with an agitator of special construction. It is claimed to be considerably cheaper than the old methods, 200 lb. of spent bleaching clay requiring roughly three-quarters the same amount of steam, 100 gals. of water, and the chemical products necessary. Power consumption is also very low, attaining a maximum of 5.6 h.p. for an installation for the treatment of about 2,000 lb. of oil-laden bleaching clay for 8 hours. No special operator is required, for, it is claimed, the process is so simple that it can be attended to by the staff of the refining plant in their spare moments. Another advantage of the system is said to be the reactivation of the spent bleaching clay after the oil and fat have been extracted. Information reaching this country unfortunately does not supply the information as to the chemicals used.

Chemical Markets & News

Glidden and Jones-Dabney Take Out du Pont Lacquer Licenses and Bitterly Fought Litigation Ends Abruptly.

Bitterly fought lacquer patent suit between du Pont and Glidden came to a sudden, dramatic end Dec. 7 when the companies reached a settlement out of court. Glidden agreed to accept the licensing agreement.

History of the litigation goes back to '32 when du Pont as a test case to establish the validity of the so-called Flaherty patents filed suit against Glidden. Previously a licensing offer was made by du Pont to other lacquer producers. A number of important manufacturers refused to accept and banded together as the Lacquer Trustees in opposition under the leadership of Frank G. Breyer of Singmaster & Breyer. Suit was 1st tried in Brooklyn District Court in June, '32 and resulted in victory for Glidden. On appeal to the Circuit Court of Appeals du Pont won. Glidden's petition for a rehearing was granted, but the Court late in November, '33 reaffirmed its own decision. Indications strongly pointed to Glidden taking the case into the Supreme Court. Agreement between the companies, announced in Cleveland, was unexpected in most quarters of the lacquer industry and, therefore, came as a distinct surprise.

Immediately following the du Pont-Glidden agreement the former again renewed its licensing offer to the lacquer industry under the same terms as granted to the latter. These terms were announced as follows:

"A payment to us of four and one-half cents (4½c) on each gallon of the compositions used and/or sold by you and your subsidiaries (if any) embodying the invention or inventions of the Flaherty patent from January 2, 1931, up to and including December 31, 1933. This payment will constitute a complete release from past infringement, of the Flaherty patent and the other lacquer patents mentioned in our lacquer license agreement, by you, your subsidiaries (if any), and your customers of such licensed compositions with respect to which royalties are so paid.

"An agreement by you to accept our standard form of lacquer license agreement (with the reference to Hitt Patent 1,710,453 eliminated from Sections 6 and 9 thereof), whereby you agree to pay a royalty of six cents (6c) per gallon on every gallon of the licensed compositions used and/or sold by you and your subsidiaries (if any) and embodying the invention or inventions of the Flaherty patent, with a minimum license fee of three thousand dollars ($3,000) per year, from January 1, 1934, up to the date of the termination of said license*. The agreement will include a provision that you may cancel at your option at the end of any calendar year by giving us sixty (60) day's notice in writing of your intention so to do.

"This offer will expire on December 18, 1933, and any acceptance must be in our hands on that date.

Breyer Statement

On Dec. 29 Frank G. Breyer made the following statement outlining his present position. "Recent announcements in the press and in trade journals have reported the settlement out of court of the so-called Duco patent suits which were brought by E. I. duPont de Nemours & Co. against the Glidden Co. in New York and the Jones-Dabney Co. in Wilmington. As organizer of the support which was given to these two defendants quite generously by the industry, a statement from me at this time is appropriate.

"Few organized movements result in 100% success. The opposition to the duPont proposals of market and price control of lacquer through patent licensing was faced from the beginning with the inherent difficulties which arise when a large number of companies with several different interests at stake get together against a single powerful opponent. In spite of these difficulties, the opposition has benefitted the industry to a substantial extent by its activities.

"For example, some 200 or more smaller producers may now operate by paying duPont $1,000 instead of $3,000 per year, thus saving the industry $400,000 per year. Under the new agreement duPont waives all claims to back royalties in return for a definite sum and appears disposed to be reasonable in setting the figure that must be paid. Under the terms of the old license agreement, which was in effect before the recent settlements, back royalties were to be rigidly determined and the total amount of liability was left uncertain until after the license had run for five years or the licensee had paid $50,000 in royalties.

"Furthermore, the scope of the patent monopoly has been very much restricted and what is within the monopoly clearly defined. Of the five patents offered in the original license agreement, only two were the subject of litigation. One of these, the Hitt patent, has been acknowledged invalid, and the broader claims, Nos. 13 to 16 inclusive, of the Flaherty patent have been disclaimed. The Flaherty patent is the only patent on which royalties are based and the only patent mentioned in the clause of the license agreement which permits price fixing.

"That part of Judge Campbell's decision against the patent in the District Court which deals with the facts has been accepted by most informed lacquer men as correct.

*On Dec. 15 du Pont announced in a formal statement that the stipulation of a minimum license fee of $3,000 per year has been reduced to $1,000. Same statement announced that there had been a wide acceptance of the offer by lacquer producers. At the end of the month du Pont reduced drastically still further the minimum fee. Settlement out of court of the Jones-Dabney suit was also announced.

The MONTH REVIEWED

"The decision of the Second Circuit Court of Appeals reversing Judge Campbell and holding certain claims of the Flaherty patent valid is based on a very broad application of the doctrine of commercial success and a conclusion that the prior lacquers could not have succeeded commercially.

"In view of the sudden settlement effected with the defendants, no opportunity exists now to bring either of these suits before the Supreme Court, although other circuits, such as the First in New England and the Seventh in Chicago, have applied this doctrine of commercial success much more sparingly.

"If the control which duPont has obtained through the settlement of the litigation becomes unduly burdensome to producers or consumers, it is entirely possible that a test of the Flaherty patent will be made in some other circuit than the Second or Third which may permit the entire matter to be brought before the Supreme Court for review.

"On the whole, however, material benefits have resulted from the organized opposition. The results are decidedly encouraging to the independent manufacturer and demonstrate that much can be done by cooperative effort even when the difficulties to be surmounted seem at first overwhelming.

"Both licensed manufacturers and those who prefer to operate outside the scope of the patent, as defined by the Circuit Court decision, will continue to benefit. A fund of information concerning both the business and the technical aspects of the matter has been collected and is increasing daily. This is a tool which will hold the patent control within definite limits. It will also be used to keep at a minimum the payments which the industry will have to make because of this patent control."

Higher Lacquer Prices?

It is rumored in the trade that higher prices are to be announced shortly by du Pont. It is said that definite increases in industrial lacquer schedules will become effective Jan. 15.

Exposition a Success

Fourteenth Exposition of Chemical Industries (unofficially and much better known as "The Chem Show") passed into history at 11 P. M. Saturday evening, Dec. 9 after making a number of interesting records. Second exposition held during the depression (the other having been held in May of '31) had fewer exhibitors, the 3rd floor of the Grand Central Palace being entirely dark. Nevertheless interest and amount of business done in the week of Dec. 4-9 exceeded the '31 exposition by a wide margin. Registration was 33,000 against only 22,000 in '31.

Market materials, and machines, were nicely coordinated. Here was a unique source of information and inspiration to all who are interested in the more than half a hundred industries which are classified as chemical. As events proved, the Exposition was rightly timed and well prepared. There is no doubt that it was well presented. Exhibitors worked with zest to make their presentations outstanding. There was an air of new zest and alertness in tune with the tide of national recovery.

More Chemical

Past exposition was decidedly more chemical. CHEMICAL INDUSTRIES and PLASTIC PRODUCTS exhibited 304 chemicals newly manufactured within the last 2 years by advertisers in these papers. A. C. S. showed "Children of the Depression"—new products brought out commercially in the last 2 years.

COMING EVENTS

National Association of Dyers' & Cleaners 27th Annual Convention, Chicago, Palmer House, Jan. 16-18.

American Society of Civil Engineers, N. Y. City, Jan. 17-19. Geo. T. Seabury, 33 W. 39th st., N. Y. City, sec.

International Society of Master Painters and Decorators, Waldorf-Astoria, N. Y. City, Feb. 6-9.

American Ceramic Society, Cincinnati, Feb. 11-16.

Technical Association of the Pulp & Paper Industry, N. Y. City, Waldorf-Astoria, Feb. 19-22.

British Industries Fair, White City, London, Feb. 19-March 2.

A. S. T. M. Regional Meeting, Washington, March 7.

American Management Association, 4th Annual Packaging Exposition, Hotel Astor, N. Y. City, March 13-17.

A. C. S. 87th Meeting, St. Petersburg, Fla., Hotel Vinoy Park, week of March 25.

Third Technical & Chemical International Congress of Agricultural Industries, Paris, week of March 26.

American Drug Mfrs. Association, Greenbrier, White Sulphur Springs, week of April 16.

Knitting Arts Exhibition, Commercial Museum, Phila., Apr. 23-27.

Electrochemical Society and American Ceramic Society joint meeting, Asheville, N. C., April 26-28.

A. C. S. 12th Midwest Regional Meeting, Hotel Muehlebach, Kansas City, Mo., May 3-5.

American Institute of Chem. Engineers, Spring Meeting, N. Y. City, week of May 14.

Achema VII Exhibition of Chemical Apparatus & Plant, Cologne, Germany, May 18-27.

American Petroleum Institute, mid-year meeting, Pittsburgh, William Penn Hotel, May 22-24.

Ninth International Congress of Pure & Applied Science, Madrid, Spain, June 10-17.

Eleventh Colloid Symposium, Madison, Wis., June 14-16.

A. S. T. M. Annual Meeting, Chalfonte-Haddon Hall, Atlantic City, June 25-29.

Technical Association of the Pulp & Paper Industry, fall meeting, Portland, Ore., Aug. 28-31.

LOCAL

A. C. S., Midland Section, Jan. 10.

N. Y. Section A. I. C., Chemists Club, Jan. 12.

A. C. S. Eastern N. Y. Chem. Lab. Union College, Jan. 12.

A. C. S. Conn. Valley, Oakes Hotel, Springfield, Mass., Jan. 13, 6 p. m.

N. Y. State Sewage Works Association, Hotel McAlpin, N. Y. City, Jan. 16, A. S. Bedell, State Dept. of Health, Albany, sec.

Oklahoma Petroleum Marketers' Association, Oklahoma City, Okla., Jan. 18.

N. Y. Section American Association of Refrigerating Engineers, Jan. 25.

Oil Trades Association Meeting, Waldorf-Astoria, Jan. 23.

Joint Meeting N. Y. Sections of 4 technical societies, Feb. 2.

Ninth Annual Dinner, Drug & Allied Trades Section, N. Y. Board of Trade, Waldorf-Astoria, March 8.

Secretaries of chemical associations and groups allied to chemistry are urged to make use of this column.

Foreign Trade

A seasonal decline of about 5% cut the value of November exports to $784,000,000, or nearly $10,000,000 less than for October, while imports declined nearly $23,000,000 to a value of $128,000,000, Commerce Dept. reported Dec. 27.

Notwithstanding the decline, month's exports were valued at 33% more and imports at 23% more than for November, '32, and the resulting favorable balance of $56,000,000 was the largest for any month since January, '31.

In addition, November trade brought total of exports and imports for the 1st 11 months to a point higher than for the corresponding period last year, apparently assuring an increase over the preceding calendar year for the 1st time since the decline began in '29.

November export total of $184,000,000 compared with $193,734,000 for October, while last month's imports were valued at $128,000,000, compared with $150,856,000 for the previous month.

For the 1st 11 months this year exports totaled $1,482,764,000, as against $1,479,402,000 for the corresponding period last year and $1,611,016,000 for the whole of '32. Imports for the 11 months of '33 reached $1,315,497,000, compared with $1,225,687,000 for the corresponding period last year and $1,322,774,000 for the calendar year 1932.

Following table compares November's chemical and allied products exports with October's, in value:

(In thousands of dollars)

Article	*Oct. 1933*	*Nov. 1933*
Lard	3,094	2,934
Animal products, inedible	3,108	3,733
Naval stores, gums and resins	1,346	1,185
Non-metallic minerals	29,392	28,496
Refined mineral oils	15,997	16,401
Crude sulfur	1,247	1,092
Bauxite	762	122
Chemicals and related prod	7,504	7,322
Coal tar products	1,458	1,115
Pigments, paints, varnishes	1,118	1,145

November Imports

(In thousands of dollars)

Article	*Oct. 1933*	*Nov. 1933*
Animal products, inedible	12,199	8,077
Vegetable products, inedible	18,979	17,489
Flaxseed	2,985	2,145
Expressed vegetable oil	2,865	2,852
Wood pulp	6,537	7,396
Non-metallic minerals	6,748	5,882
Petroleum and products	1,781	1,944
Copper	1,197	2,199
Tin (bars, etc.)	7,014	3,522
Chemicals and related products	5,921	5,290
Fertilizers	2,571	2,223

'33 Chemical Trade

U. S. '33 chemical foreign trade has shown a decided improvement in many lines over preceding year, although total figures are still under those of earlier years. Complete figures for entire year '33 are not yet available, but for 1st 11 months exports of chemicals and allied products were valued at $96,700,000 and imports at $77,900,000, compared with $95,300,000 and $72,100,000 respectively, for the 12 months of '32. Low point was reached during 1st quarter of the year, when only $21,700,000 were exported and $16,800,000 were imported. Second quarter showed a

gain to $24,600,000 and $20,000,000 respectively, and figures for the 3rd quarter picked up still more to $29,200,000 and $24,000,000. Progression is particularly noticeable during October and November, when figures for both exports and imports approximated those for 1st 3 months (January-March) of the current year.

Foreign trade conditions have been completely dominated in the past year by the question of depreciated currencies and by the fluctuations of foreign exchange. Up until our abandonment of the gold standard and the introduction of inflationary measures of one sort or another our foreign trade suffered in 2 ways. With a high value dollar countries with depreciated currencies were able to export into the U. S. at extremely low prices thus giving us strong competition on a host of items. In the chemical field this was particularly so of sulfate of ammonia, superphosphate and mixed fertilizers. With the dollar value high in terms of foreign depreciated currencies our exports declined rapidly in favor of countries with such depreciated currency. Depreciation of the dollar has largely changed both of these conditions, and added to the generally better international state of trade, has improved our foreign trade.

The other side of the picture of the depreciated value of the dollar is higher prices for items we largely import. Quotations on chemicals, metals, metal salts, fats and oils, gums, waxes and other raw materials have within recent months been largely nominal as the dollar fluctuated within wide limits. It is most important to remember this when discussing either prices or quotations of imported items. Data below gives the foreign exchange rates for December, '33. Fluctuation in December was within much narrower limits than prevailed in November.

Stable CO_2 Market

Manufacturers planning to purchase equipment using dry ice, as trucks, cabinets, etc., may do so with a reasonable assurance that price variations of dry ice would be at a minimum for '34. Lewis C. Chamberlin, manager of the solid carbon dioxide division of Michigan Alkali, reported recently. This stability, he pointed out, arises from 2 causes, (1) a better understanding of the market and its requirements by dry ice producers, who recognize that if the expansion of the industry is to continue as in the past, dry ice prices must not materially fluctuate, and (2) stabilization of productive conditions which take care of a fluctuating demand. Mr. Chamberlin pointed out that recent wage increases at Michigan Alkali's dry ice plant have amounted from 10 to 15%, with the result labor costs may be considered stabilized.

Litigation

Du Pont Viscoloid's suit against the New York Merchandise Co. in the Southern District of N. Y., was terminated on Jan. 2 in favor of Du Pont Viscoloid, by a decree signed by Judge Coleman. By the terms of the decree defendant is enjoined from further infringement of the patents in suit.

Suit was based on the Higgins patents 1,607,624 and 1,606,030 issued in 1926 to cover a new kind of plastic material containing pearl essence or fish scale pigment incorporated in such a manner as to exhibit the full beauty and mother-of-pearl effect of the pigment. Patented material has been extensively used in the manufacture of toilet sets, combs, novelties, and the like.

Suit was filed in July '33, and as a result of a motion for preliminary injunction, case was given a preference and the date of trial set for Dec. 27. Accordingly, on the 27th, 28th and 29th of Dec. a full trial on the merits was held before Judge Coleman. In his findings of fact, Judge Coleman held the patents valid and infringed.

Widmer Patent Again

Federal Judge Barnes (Chicago) entered in the past month decree declaring interlocutory decree entered Sept. 30, '31, in Penick & Ford, Corn Products Refining patent suit vacated and holding that defendant, Corn Products, has not infringed on certain patent claims granted John N. Widmer, chemist, for P. & F., which claims are invalidated.

Decree also invalidates disclaimers entered in U. S. Patent Office on Widmer patents for distillation of corn starch. Decree invalidates claims of patents on similar processes issued to Rush O. McCoy, Corn Products chemist, and dismisses counterclaim of Corn Products Refining. P. & F. bill of complaint is dismissed for want of equity and Corn Products is ordered to recover costs and disbursements in the case in sum of $1,019.

Tubize vs. Industrial Rayon

Judge John P. Nields in Wilmington, Del. Federal Court filed 2 decrees in the 2 patent infringement suits of Tubize Chatillon against Industrial Rayon holding that the James A. Singmaster rayon patents now owned by Tubize are valid and have been infringed by defendant corporation. Decrees cite, however, that the companies have adjusted their differences and that the defendant has taken out a license to use processes covered by patents Nos. 1,875,894 and 1,752,742.

Sues For $1,500,000

Referee J. O. Carr, Wilmington attorney, has been hearing evidence in $1,500,000 conspiracy suit brought by 4 creditors of the former E. H. & J. A

FOREIGN EXCHANGE RATES, DECEMBER 1933

(Compiled in the Division of Regional Information from statistics of the Federal Reserve Board)

Note.—Averages are in dollars per unit of foreign currency and are based on daily quotations of noon buying rates for cable transfers in N. Y. City. South American rates are not given, as the only rates available are nominal

Country	Monetary unit	Mint par	Average rate in paper dollars		Gold dollar equivalent of average rate[1]		Aver. rate in paper dollars	Gold dollar equiv. of aver. rate[1]	Aver. rate in paper dollars	Gold dollar equiv. of aver. rate[1]	Aver. rate in paper dollars	Gold dollar equiv. of aver. rate[1]
			November	Week Dec. 3-9	November	Week Dec. 3-9	Week Dec. 10-16	Week Dec. 10-16	Week Dec. 17-24	Week Dec. 17-24	Week Dec. 24-30	Week Dec. 24-30
Canada	Dollar	$1.0000	$1.0118	$1.0120	$0.6326	$0.6482	$1.0043	$0.6454	$1.0023	$0.6412	$0.9998	$0.6383
Cuba	Peso	1.0000	.9996	.9996	.6249	.6403	.9996	.6424	.9996	.6394	.9996	.6382
Mexico	Silver peso	.4985	.2780	.2774	.1738	.1777	.2772	.1781	.2774	.1775	.2776	.1772
Belgium	Belga	.1390	.2232	.2175	.1395	.1393	.2166	.1392	.2173	.1390	.2178	.1391
France	Franc	.0392	.0627	.0612	.0392	.0392	.0610	.0392	.0613	.0392	.0614	.0392
Germany	Reichsmark	.2382	.3824	.3732	.2391	.2390	.3725	.2394	.3733	.2388	.3740	.2388
Italy	Lira	.0526	.0843	.0825	.0527	.0528	.0819	.0526	.0821	.0525	.0822	.0525
Netherlands	Florin	.4020	.6546	.6296	.4036	.4033	.6265	.4026	.6280	.4017	.6295	.4019
Spain	Peseta	.1930	.1311	.1279	.0820	.0819	.1273	.0818	.1281	.0819	.1286	.0821
Sweden	Krona	.2680	.2655	.2642	.1660	.1692	.2628	.1689	.2637	.1687	.2639	.1685
Switzerland	Franc	.1930	.3102	.3029	.1939	.1940	.3016	.1938	.3023	.1934	.3031	.1935
United Kingdom	Pound	4.8665	5.1497	5.1221	3.2196	3.2808	5.0923	3.2724	5.1132	3.2709	5.1162	3.2664
China (Shanghai)	Yuan		(2)	.3290	.3342	.2057	.2141	.3316	.2131	.3345	.2140	.3378	.2157
Hong Kong	Dollar		(2)	.3669	.3724	.2294	.2385	.3682	.2366	.3715	.2376	.3736	.2385
India	Rupee		.3650	.3834	.3839	.2397	.2459	.3821	.2455	.3841	.2457	.3843	.2454
Japan	Yen		.4985	.3036	.3077	.1898	.1971	.3061	.1967	.3080	.1970	.3079	.1966
Straits Settlements	Dollar[3]		(2)	.6006	.5984	.3755	.3833	.5948	.3822	.5957	.3811	.5958	.3804
Union of So Africa	Pound	4.8665	5.0929	5.0609	3.1841	3.2416	5.0340	3.2350	5.0547	3.2335	5.0606	3.2309
Australia	do	4.8665	4.0975	4.0740	2.5618	2.6095	4.0526	2.6043	4.0715	2.6045	4.0883	2.6101
New Zealand	do	4.8665	4.1104	4.0862	2.5698	2.6173	4.0651	2.6123	4.0837	2.6123	4.1002	2.6177
Bullion												
Silver[4]	Ounce, troy		.4329	.4352	.2755	.2788	.4313	.2771	.4352	.2784	.4428	.2827
Gold[5]	do		33.34	34.01			340.0100		34.06		34.06	

[1]Gold-dollar equivalents are based on quotation of the French franc in New York City.
[2]Partly nominal.
[3]Par varies with the price of silver.
[4]The "official" price of spot silver in New York.
[5]United States Government price as published by Reconstruction Finance Corporation.

Meadows Co. against Meadows Fertilizer, Davison Chemical and C. Wilbur Miller (former Davison Chemical president). Appeal from decision of Judge William A. Moncure of Chancery Court has been taken to Virginia Supreme Court of Appeals by 8 V.-C. directors whose election was declared invalid. George S. Kemp, director of the corporation, heads group filing appeal.

Association News

Confidence in the President and his policies were voiced by Chemical Foundation head, Francis P. Garvan, principal speaker at the luncheon which followed the annual S. O. C. M. A. meeting held at the Chemists' Club in N. Y. City on Dec. 7. Other speakers introduced by President Merz (reelected for another term) were C. C. Concannon, recently returned from a European trip, and Carbide's Cressy Morrison. Former reported briefly on conditions abroad, and the latter, on the need for constant consciousness of the necessity of a protective tariff for the chemical industry.

Mr. Garvan's extemporaneous address, blunt, serious, and jocular in turn and always straight from the shoulder, covered a wide range of subjects. He strongly urged the necessity of chemical manufacturers making even greater research efforts than in the past.

A note of sadness was introduced into the business meeting when du Pont's Killheffer refused reelection as vice-president due to ill-health.* Officers elected in addition to President Merz were: vice-presidents, du Pont's E. G. Robinson, and F. G. Zinsser; treasurer, Dow's Eastern manager, Ralph E. Dorland; secretary, Charles A. Mace.

Reese, '34 A. C. S. Head

Charles L. Reese, retired duPont chemical director who served as president-elect during '33, is A. C. S. president in '34. By vote of the Council, following were elected to offices indicated for the terms beginning Jan. 1, '34:

President-elect, Roger Adams, Head of the Department of Chemistry, University of Illinois, Urbana, Ill.

Councilors-at-Large, William Lloyd Evans, chairman of the Department of Chemistry, Ohio State University; Francis C. Frary, director of research, Aluminum Co. of America; C. M. A. Stine, vice-president, member of executive committee and director, du Pont; E. H. Volwiler, vice-president in charge of research, Abbott Laboratories, North Chicago, Ill.

Director for the 4th District, E. Emmet Reid, Professor of Organic Chemistry, Johns Hopkins; Director for the 6th District, Edward Bartow, Head of the Department of Chemistry, State University of Iowa, Iowa City, Iowa. Director-at-Large, Gustavus J. Esselen, President, Gustavus J. Esselen, Inc., Boston, Mass.

*See page 67.

Engineers Elect

A. I. Ch. E. at its recent Roanoke meeting elected consulting chemical engineer, A. E. Marshall, specialist in glass, sulfuric and alkali problems, as president. He served as vice-president in the past regime of J. V. N. Dorr. Dr. Marshall has served the Institute long and faithfully and his election comes as recognition of this debt as well as his outstanding ability as an organizer and leader. Vice-president for '34 is Harry A. Curtis, recently appointed TVA chemical engineer. Secretary is again F. J. LeMaistre. M. H. Ittner, soap authority, is treasurer. Newly elected directors include J. R. Withrow, E. L. Wilson, A. G. Peterkin, and G. J. Essellen.

Olsen Honored

Dr. John C. Olsen, Brooklyn Poly, was presented with a clock by the directors of the Institute in recognition of his services from 1908.

"Principles of chemical engineering," heat transfer, air conditioning, manufacturing of asbestos, ceramics, capsules, chewing gum, photographic film, beer and a dozen other products of daily commerce were some of the subjects discussed.

Swenson Salesmen Head

Chemical Salesmen have elected Cyanamid's Swenson as president; Grasselli's Alverez, 1st vice-president; Edward S. Burke, 2nd vice-president; Commercial Solvent's Lichtenberg's 3rd vice-president, and Monsanto's Byrne, secretary-treasurer. As has been its custom for several years CHEMICAL INDUSTRIES reports for the record that the Christmas Party, bigger, better than ever, was held at the Park Central, Dec. 28, amid scenes of oriental splendor.

Organic Chemists at Cornell

Complex structural formulae filled the walls of Cornell's main chemical lecture room as leading U. S. organic chemists gathered at Ithaca, Dec. 28 for the 5th National Organic Chemistry Symposium. Speakers included among others Cornell's Bancroft, Penn State's Whitmore, Princeton's Wallis, M. I. T.'s Norris and Dow Chemical's Britton.

Association Notes

Chemical Club of Philadelphia officers are: President, Col. Meehan; vice-president, Walter E. Wright; secretary, George B. Heckel, Jr.; treasurer, Samuel Harris. Christmas Party was held Dec. 11.

Dr. J. M. Weiss

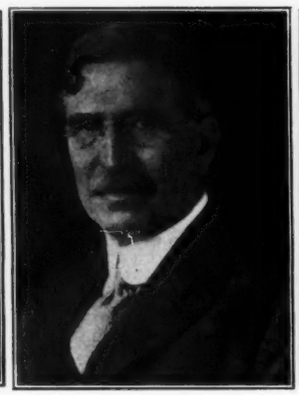
Dr. J. M. Weiss, Weiss & Downs, is '34 chairman of the N. Y. Section, A. C. S. Columbia's A. W. Hixson is vice-chairman, and Dr. D. P. Morgan, Scudder, Stevens & Clark, is again secretary-treasurer. Executive Committtee consists of Prof. LaMer, D. W. Jackson, D. H. Killeffer and W. S. Landis. The latter and Dr. William B. Guthrie, City College economist, were on the program of the December meeting of the N. Y. Section of the American Institute of Chemists. Dr. Charles E. Reese, A. C. S. president, spoke before the Maryland Section Dec. 15 on "Half-Century in Chemistry."

Sherman Nichols Medalist

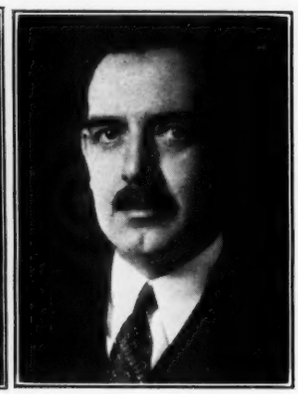
The William H. Nichols Medal, bestowed annually by the A. C. S. N. Y. Section, has been awarded for '34 to Dr. Henry C. Sherman, Mitchill professor of chemistry at Columbia.

Leading Executives Who Head Societies In '34

S. O. M. C. A.
August Merz



A. C. S.
Dr. Charles L. Reese



A. I. Ch. E.
Dr. A. E. Marshall

Customs and Tariffs

A 25% reduction in import quotas to the U. S. and all other countries doing business with France has been announced by Commerce Minister Laurent Eynac. New figures became effective Jan. 1.*

Customs Court has handed down a decision in protest brought by Henry A. Golwynne. Court held that caustic calcined magnesite imported in lump was correctly assessed at 15/16 of a cent per lb. under Paragraph 204 of the Tariff Act and not at 23/40 of a cent as dead burned magnesite and periclass, as claimed.

A German government decree, effective Dec. 18, increases import duties on certain pigments, among other products. Changes made are as follows:—

	RM per 100 kg.	
	New	*Old*
Coloring earths, other than chalk	4.00	1.50
Lithopone	4.50	3.00
Zinc oxide	6.00	5.00

Lead acetate and superphosphates are articles recently taken up for official consideration in Great Britain under applications for increases in import duties.

Tariff Classification

A change in tariff classification of allyl bromide, resulting in an increase of duty, was ordered Dec. 6 by the Bureau of Customs, effective 30 days after publication of the notice. This product, used in manufacture of allylbarbituric acid, has been entering as a bromine compound not specially provided for at 10c per lb. under paragraph 45 of the tariff act. It is now ruled that, as the product is also a salt or ester of allyl alcohol, paragraph 2, is more specific description, and henceforth the duty will be 6c per lb. plus 30% ad valorem.

Foreign

Lautaro Nitrate reports deficit for year ended June 30, '33, of $4,816,619 compared with a deficit of $5,871,904 for previous fiscal year. Company is largest producer of nitrate in Chile. Dissolution of the Chilean Nitrate Trust (Cosach) is provided in projected Chilean legislation now pending.†

Annual report states that company produced 187,355 metric tons during fiscal year. Sales are stated as 274,350 metric tons or 34.24% of total sales allocated to all producers amounting to 801,531 metric tons. Price received was $20.80 a ton or 8.22% at less than previous year and comparing with $46.94 a ton received in 1926-1927.

Consumption is restricted by tariff barriers and license systems existing throughout the world, plus the reduced demand for nitrogen on account of the low commodity prices and overproduction or underconsumption of agricultural products," says the report.

"On Jan. 7, '33, administration of world sales was taken over by the liquidating committee of the Companie de Salitre de Chile (Cosach) and from that date forward the primary responsibilities of sales operations rested with the liquidating committee. Policy of the management with respect to its synthetic competitors is directed toward maintenance of a constructive competitive price level and a proper differential."

British Chemicals

British November chemical exports recorded an increase in value of £240,517. Total value of exports for 11 months of '33, according to the Board of Trade's statistics, was £223,164 greater than total for the 1st 11 months of last year. Imports of chemicals from abroad also increased during November, value being £279,680 greater.

Orders, effective Dec. 27, provide duty-free admission into the U. K. of synthetic organic dyestuffs when imported under a Board of Trade license, and increase from 10% to 20% ad valorem the duty on pigments which are synthetic organic colors and coloring matters. Effective from the same date, the Board of Trade is issuing open general licenses permitting importation of compound preparations and articles not suitable for use in dyeing, manufactured from synthetic organic dyestuffs, including pigment dyestuffs, whether soluble or insoluble.

British Cyanides' release of its fiscal report for year ending June 30 showing net of £12,724 as against £9,321 in the preceding 12 months, also discloses further details of the Pollopas deal. As part consideration for the purchase the company has transferred to Pollopas, Ltd., its interest in Synthetic Plastics (Cyanamid-Beetleware).

Reference is also made to new lacquer resin developed in the company's laboratories, and for which special equipment for manufacture is to be installed at Oldbury. All I. G. patents on lacquers and lacquer resins of the urea type have been acquired for England, and manufacture of Plastopol resins made by I. G. will be undertaken at Oldbury, together with that of any new lacquer resins of the urea type that may be discovered.

George Dring, development manager of Bakelite, Ltd., England, discussed shortage of natural phenol in England before Birmingham Section and Plastics Group of the Society of Chemical Industry recently and reported that it might yet be necessary to resort to synthetic production.

German Sulfate Exports

German ammonium sulfate exports for 1st 9 months of '33 rose to 299,445 metric tons, as compared with 255,260 in corresponding months of '32. Chief markets served were: Japan, 94,434 tons; Netherlands, 62,382; China, 47,930; Spain, 33,-197; Philippines, 20,484; Denmark, 18,196; Netherlands Indies, 6,096, and Brazil, 1,143.

Under leadership of Deutsche Gold und Silber Scheideanstalt (which owns control of Wegelin A.G.) a German carbon black association has been formed.

German potash exports recovered in the 3rd quarter of '33 much of the loss reported for the 1st half of the year. While total deliveries in the 1st 9 months were only 4% less than those in the corresponding period of the previous year, the loss in declared value was 18%.

Exports of potash salts in the 9 month periods of the past 2 years were as follows:

	1933		*1932*	
	Metric tons	*Marks*	*Metric tons*	*Marks*
Chlorides	357,893	16,135,000	363,608	19,062,000
Sulfate	161,317	17,629,000	178,741	21,034,000

An Important Step

France is about to finally determine status of Alsatian potash industry taken in Treaty of Versailles. Bill has at last passed Chamber of Deputies and there is little likelihood of further change. Difficult question for past 15 years was whether or not mines would remain state-owned or sold to private operators. Former has been chosen. Potash sales will be made by a sole bureau and the few private operators must operate through the bureau. Prices will be set by the Minister of Public Works in consultation with the Minister of Agriculture. Monopoly will also control import of potash compounds with a few exceptions. Hereafter potash deposits discovered in France or colonies will be state-controlled.*

Japanese Chemical Trade

Significant changes have occurred in Japanese chemical trade during recent years. There have been increases in shipments of sulfur, calcium carbide, acetic, and potassium chlorate. Particulars of

---

*France makes an exception in case of the U. S. and this country retains all privileges formerly held on export quotas to France.

†Nitrate reorganization bill has been approved by the Senate in substantially the same form as reported out by its committee and it is expected that the modifications made by the Senate will be approved by the House.

*Before the war Germany owned 46.5% of the capital invested in Alsatian potash industry. By a law of 1921 French Government was authorized to acquire these but actual transfer occurred in '24. "Mines Domaniales" produced 2,214,850 tons of crude potash salts in '29. They have been allied with privately owned Kali Saint Therese in export sale through Societe Commerciale des Potasses d' Alsace, which works in agreement with the German Potash Syndicate.

Japanese exports of 10 chemical commodities for 1st 8 months of '33, with comparative data for corresponding months of the 2 previous years, follow:

	First eight months		
	1931	1932	1933
Sulfur short tons	8,432	19,721	27,643
Sulfuric acid, short tons	5,702	2,472	3,411
Bleaching powder, short tons	3,190	1,820	1,383
Sodium sulfide, short tons	4,682	3,092	3,713
Calcium carbide, short tons	4,181	3,594	6,174
Arsenic, short tons	1,744	1,565	1,080
Acetic acid, short tons	65	58	389
Iodine, pounds	43,095	60,553	42,809
Potassium iodide, lbs.	73,499	83,624	75,407
Potassium chlorate lbs.	16,670	57,200	244,900

Nippon Nitrogen Fertilizer, cyanamid capacity—3,500 tons, is converting plant to synthetic acetic production due to over-production of the former material. Japanese Government is reported to have granted a subsidy for the production of titanium white and 2 companies, Shai Industrial Chemical and Dai-Nippon Artificial Fertilizer are going into the field. Imports now total about 300,000 yen a year.

Foreign Notes

Netherlands' sulfate exports declined 4% during first half of 1933 to 197,917 metric tons. Figure for corresponding period of 1932 was 205,888 tons. Chief export markets in early 1933 were: U. S., 119,639 tons; Spain, 28,187 tons and Belgium, 20,147 tons. Concurrently, Netherlands imports of sulfate declined from 61,285 tons to 35,818 tons, all from Germany (25,495) and Belgium (10,323).

Tunisian phosphate exports during 1st 8 months of this year totaled 1,170,000 metric tons, a gain of 160,000 tons over corresponding period of '32. Production during 1st 8 months of '33 exceeded export by only 3,000 tons in contrast with an excess of 113,000 tons during corresponding months of '32.

"Alcohol, Inc." is designation of Mexican alcohol pool formed to control production and distribution. Organization is along similar lines to "Sugar, Inc." About 60% of nation's alcohol is produced by sugar mills. Mexico City reports agents of large U. S. consumers negotiating for forthcoming season's production. It is said attractive prices are possible because of extreme weakness of Mexican currency against American, now at an average rate of 3.60 pesos per $, against normal ratio of 2 for 1.

Phenol synthetic resins are being produced in the Argentine by Pisetta Hermanos y Gojberg, Buenos Aires. Phenol and formaldehyde are imported. Phenol output of Cia Primitiva des Gas de Buenos Aires is used in animal remedies. State Petroleum is investigating formaldehyde production from petroleum.

Construction of new nitric acid plants to make France independent of imports is included in French national equipment program.

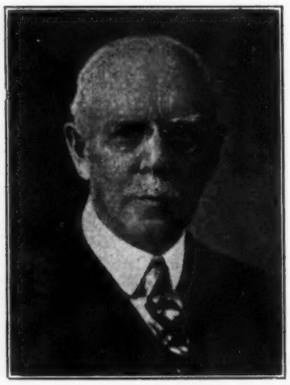
Obituaries

Edward J. Sweeney, 67, president, N. Y. Insecticide, Medina, N. Y., died Dec. 18. Dr. Joseph Mayer, 59, chief chemist, Louis K. Liggett, and head of the chemistry dept., Brooklyn College of Pharmacy, died Dec. 1. Richard B. Mellon, 75, banker, financier, member of a number of boards of industrial companies, died Dec. 1. He was a brother of Andrew Mellon and co-donator with the latter of Mellon Institute. Sterling Wallace, 75, president of the well-known printing ink company bearing his name, died Dec. 5 from injuries received in an automobile accident. Charles F. Ampt, another well-known figure in the printing ink industry, died Dec. 3. Grove E. Warner, president, Malt Diastase, died Dec. 2.

Robert A. Bautz, Chicago non-metallic minerals expert, died Dec. 13 after an operation Dec. 7. Robert Bruce Harkness, Jr., 25, chemical engineer with Merrimac Chemical, died Dec. 17. John B. Niles, 60, former du Pont purchasing agent, died Dec. 15. S. G. Tinsley, 55, vice-president, F. W. Berk & Co., and formerly with Synthetic Nitrogen Products and before that with Kuttroff-Pickhardt, died of heart failure in his hotel room in Philadelphia on Dec. 21.

Personal

Dr. Arthur D. Little, U. S. dean of the chemical consultant corps, was 70 years "young" Dec. 15. Greeting his staff on his early arrival for a full day's work he was surprised with the presentation of a specially bound and inscribed volume of the Morse Collection of Japanese Potteries. Actual presentation was made by Roger C. Griffin, director of tests, and a member of the board of directors of Arthur D. Little, Inc. Mr. Griffin is a son of Roger B. Griffin, Dr. Little's original partner when the organization was formed as Griffin & Little in 1886.



Dean of the chemical consultants is 70 years "young"—Dr. Arthur D. Little

Fink, Perkin Medalist

Columbia's Colin G. Fink received the Perkin Medal (Society of Chemical Industry) Jan. 5. Meeting was held jointly by 4 societies—Society of Chemical Industry, A. C. S.; Electrochemical Society; and Societe de Chimie Industrielle. McGill's Hibbert described Dr. Fink's work and Prof. Marston T. Bogert presented the medal, wearing, of course, the tie dyed with some of Perkin's 1st synthetic dye. Dr. Bogart never fails to mention it at the Perkin Medal meeting. Dr. Fink's paper "Chemistry and Art" discussed the seldom appreciated relationship between the 2 fields.

He is past president and now secretary and editor of The Electrochemical Society, honorary member of Tau Beta Pi; fellow of the American Association for the Advancement of Science; editor of the chapter on "Tungsten," Mineral Industry; editor of "Electrochemistry," Chemical Abstracts, A. C. S.; contributing editor to The American Year Book (Chapter on "Electrochemistry"); member of the Hoover Dam Committee; chairman of the Committee on Electrochemistry for the Chicago Century of Progress; member of the staff of the Metropolitan Museum of Art, N. Y. City; member of Sigma XI, Epsilon Chi, A. C. S., American Institute of Mining and Metallurgical Engineers, American Institute of Chemists, The Electrochemical Society. He is best known, of course, for his research work on electroplating of chromium and cadmium, but his investigations have been extensive in a number of other fields also.

The "Passing Review"

Bakelite's advertising manager, Allan Brown, recently spoke before the American Marketing Society on "How We Are Expanding Markets For Our Products." Commercial Solvent's Ambrose H. Rubey was married recently to Miss Miriam Combs of Terre Haute. Philadelphia Quartz's well-known advertising manager, Miss Frances M. Suarez, has been appointed to the board of the Philadelphia Club of Advertising Women. Harvard's president, Dr. James Bryant Conant, received the honorary degree of doctor of laws Dec. 19 from the University of Chicago. Frank S. Hossenlopp, secretary and treasurer, Chemical Charcoal, Buffalo, is now a director of the new Lincoln-East Side National Bank. Walter Sterz, 70, has been retired from active service by Chas. Pfizer & Co. He was tendered a luncheon Dec. 27 by the board of directors. *I. E. C.* editor, Dr. Harrison E. Howe, toured the middle west late in December with the A. C. S. Chemical Exposition display—"Children of the

Depression." California's G. N. Lewis is the single American on the program of the Ninth International Congress of Pure & Applied Chemistry to be held at Madrid, week of April 5.

Equipment Personnel

H. W. How is now with Blaw-Knox's process equipment dept., to develop Company's line of welded pressure vessels and equipment for process industries. He was formerly Buffalo Foundry's chief engineer and more recently manager of Struthers-Wells' process equipment dept.

T. A. Bryson, who has been identified for many years with the design, construction and application of centrifugal separators in the process industries and who is to a large degree responsible for the modern development of the art, has been retained as consulting engineer by the American Tool & Machine Co., Boston.

Personnel

James M. Doran, Commissioner of Industrial Alcohol, and previously Commissioner of Prohibition, has resigned after 26 years of government service to become supervisor of the Distilled Spirits Institute.

National Oil Products' Changes

General reorganization of National Oil Products' executive dept., has been announced by President, C. P. Gulick. These changes were effective Jan. 1. Vice-President, J. H. Barton, has been relieved of his duties as head of the farm feed dept. and has been made general manager of the Company. He has been placed in charge of production and the physical properties of the Company including plants, warehouses and real estate.

Secretary, G. D. Davis, has been appointed general sales manager in charge of the sales of the industrial, farm feed and administration dept. Treasurer, Ralph Wechler, has been relieved of many commercial duties in order to permit him to concentrate on his work as technical director. He retains general supervision of the vitex dept. Dr. C. I. Post remains as manager of the vitex dept. in general charge of vitex sales to the food industries. E. T. Woods continues as works manager being responsible to Vice-President Barton.

"From Here to There"

D. E. Huffman, former chief chemist, Southwestern Engineering, has joined Eldorado Boulder Mine, Searchlight, Nev. Monsanto has transferred E. Schuler from the sales dept. in the main office in St. Louis to N. Y. City to become assistant manager. Joseph Wafer has again returned to Industrial Chemical Sales, which company he left to assume the position of sales manager of Rossville Commercial Alcohol. Charles Roche is now a Merck research chemist. He was formerly with du Pont and before that with Cyanamid. Leon A. Sweet, formerly with Commercial Solvents is now in the research organization of Bauer & Black. Marion C. Reed has been transferred from Carbide and Carbon Chemicals to National Carbon's Cleveland laboratory. R. N. Sargent, former R. & H. chemical engineer, is now with General Chemical.

W. S. Edgar, formerly with Flood & Conklin and before that with du Pont, is now vice-president and technical director of R. B. H. Lacquer Base, Bound Brook, N. J. Chas. F. Reeves is Fiberloid's new sheeting division sales manager; K. J. Ecklund is sales manager of the fabricating and dental division. Major Walker (Commercial Solvents) is now a director of the company. Philip P. Gray, formerly with Pease Laboratories, is now with Wallerstein Laboratories. J. Mahlon Buck is now president, Smith, Kline & French. John Billings has been elected assistant secretary of William S. Gray.

Dr. Alexander Schwarcmann, Spencer Kellogg's chief chemist, has been added to the board of directors. G. Dubpernell is now research engineer with United Chromium. Arthur Lyem, well-known in the dyeing and finishing industry, is now with Celanese as research chemist. Walter H. Zartman is now researching at du Pont's ammonia experimental station, Wilmington.

Traffic

Optimism prevailed at the 10th annual meeting of the Atlantic States Shippers' Advisory Board, and carloadings throughout the middle Atlantic states will average 11.5% more than the actual shipments handled during the corresponding period of '33, in the opinion of that body. It was estimated that tonnages for the 1st quarter will aggregate 469,404 carloads, compared with 420,867 in '33. Estimates and comparison with '33 follows:

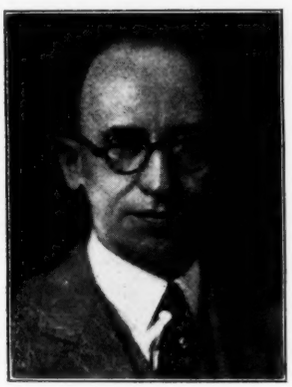
Commodity	*Estimated 1934*	*Actual 1933*	*% inc. '34 over '33*
Salt	5,534	4,986	11.0
Petroleum & prods	38,874	36,531	7.0
Sugar, syrup & molasses	5,959	5,797	2.8
Fertilizers	3,450	3,451	....
Chemicals and explosives	3,974	3,468	14.6

Trucking Interstate

I. C. C. has asserted jurisdiction over interstate trucking shipments and a special chemical committee is studying the matter from several angles. Those serving include: M. C. A. secretary W. N. Watson; H. W. MacArthur, chairman of M. C. A. traffic committee; T. P. Callahan, chairman of M. C. A. committee on steel barrels and drums; G. E. Tiley, chairman of M. C. A. committee on tankcars; M. F. Crass, chairman of M. C. A. committee on carboys and miscellaneous packages; F. R. Fetherston, secretary, Compressed Gas Manufacturers' Association, and R. T. Baldwin, secretary, Chlorine Institute.

Group has approved the principles of both the I. C. C. and state proposals, but is urging that the 2 be identical and that state laws adopt I. C. C. regulations for

Well-known Figures In First of the Year Changes



Dr. James M. Doran with Distillers' Institute

National Oil Products Advances J. H. Barton and G. D. Davis

Monsanto sends E. Schuler East to assist "Vic" Williams

containers and labels. Further meetings of the group, together with representatives of the Bureau of Explosives, are expected early in January.

Higher Salt Rates

Salt freight rates are to be revised by order of the I. C. C. following an exhaustive investigation of salt rates in the general rate structure of the railroads. Revision will involve both increases and decreases that may increase revenues of the railroads as a whole up to $1,000,000 annually.

Flaxseed Petition

I.C.C. has been petitioned for better railway freight rates on flaxseed and linseed stock feeds in a brief filed Dec. 2. Petitioners are Minneapolis Traffic Association, maintained by the Chamber of Commerce and Civic and Commerce Association, and Archer-Daniels-Midland, Spencer Kellogg and Minnesota Linseed Oil, all of Minneapolis.

Freight rates on flaxseed and linseed screenings, cake and meal are 12% higher than those on wheat and other grains and grain products. Commission is urged to reduce flax and products rates to level of wheat.

Minneapolis crushers maintain that they are placed at a severe disadvantage in competing with Buffalo and seaboard producers and insist that the life of the industry in Minneapolis is seriously in danger as a result.

N. Y. P. S. C. has approved lower commodity rates of the B. & O. on common salt, carloads, minimum weight 45,000 lbs., from Silver Springs (local) and from Halite and Retsof, on Genesee & Wyoming to Ogdensburg on Rutland Railroad, 14.5c. per 100 lbs., reduction from Silver Springs 2c per 100 lbs. reduction from class rates from Halite and Retsof, effective Dec. 24. Approval was also given to rates of the Lehigh Valley on common salt and salt compounds, carloads, minimum weight 45,000 lbs., from Ithaca, Ludlowville and McKinneys to Lisbon, Madrid and Oggensburg, on the Rutland 14.5c., reduction 2c., per 100 lbs., effective Dec. 24.

Commission has approved new freight rates of the N. Y. Central (East) on calcium chloride in tank cars, carload, minimum weight subject to rule 35 from Solvay and Syracuse to Fonda, Johnstown and Gloversville stations: Gloversville 15c (reduction 2c) and Johnstown 14c (reduction 2c) per 100 lbs., effective Jan. 23.

No Rate Change On Naval Stores

I.C.C. has rejected 4th attempt by the railroads to increase naval stores rates from Southern points to Canada.

*Word reaches this country that Italian Government has set up a Central Sulphur Sales Bureau to market Sicilian and mainland sulfur and will subsidize the industry to permit it to compete in world markets.

Heavy Chemicals

Market Dull As Year Ends

Spot purchasing declined sharply in the last 2 weeks of the month, but consumers with low-priced '33 contracts ordered out in heavy volume in an effort to build up sizable end-of-the-year inventories. Net result was a better tonnage than is usually the case for December. Producers were none too happy at this, however, as it means, in all probability, a rather slack January.

Acetic producers have divided the country into 3 zones to enable them to quote on a freight allowed basis. First zone covers territory east of the Mississippi; 2nd zone covers states to the Rocky Mountain region; and the 3rd covers the Pacific Coast. Practice of quoting spot prices 10c higher has been discontinued.

Jan. 1 marked the end of the anhydrous ammonia contracting period and prices now quoted are the spot figures. A new l.c.l. saltpeter schedule was placed in effect Jan. 2. New quotations are: pure double refined granulated, barrels, $5.90 to $6.12½ per 100 lbs., according to quantity; pure double refined powdered, barrels, $6.90 to $7.12½ per 100 lbs.; pure double refined small crystals, $6.90 to $7.12½ per 100 lbs.; pure double refined medium crystals, $7.25 to $7.50 per 100 lbs.; pure double refined large crystal, $7.65 to $7.87½ per 100 lbs.

A new schedule has also been announced for refined sulfur.* Virgin rock brimstone, barrels, $2.15 to $2.90 per 100 lbs., according to quantity; broken rock brimstone; barrels, $2.30 to $3.05 per 100 lbs.; bags, $2.15 to $2.90 per 100 lbs.; roll brimstone, barrels, $2.50 to $3.25 per 100 lbs.; bags, $2.35 to $3.10 per 100 lbs.; flour sulfur, heavy, refined, barrels, $2.90 to $3.65 per 100 lbs.; bags, $2.55 to $3.30 per 100 lbs.; flour sulfur, light, refined, for fireworks manufacturers use, barrels $3 to $3.75 per 100 lbs.; bags, $2.65 to $3.40 per 100 lbs.; extra fine refined sulfur, barrels, $3.20 to $3.95 per 100 lbs.; bags, $2.85 to $3.60 per 100 lbs.; flowers of sulfur, sublimed, barrels, $3.35 to $4.10 per 100 lbs.; bags, $3 to $3.75 per 100 lbs.; commercial flour sulfur, 99½% pure, for insecticide and fertilizer, barrels, $1.95 to $2.70 per 100 lbs.; bags, $1.60 to $2.35 per 100 lbs.

Writing of contracts continued at a more rapid pace in December. Producers of sodium cyanide, carbon tetrachloride, carbon bisulfide, white arsenic and other important items solicited contracts at '33 levels. In practically all cases the new 6 months clause-type of contract was employed.

Important Price Changes

	Dec. 31	Nov. 30
ADVANCED		
Acid, oxalic	$0.11¼	$0.11
Ammonium sulfocyanide	.50	.48
Argols, 80%	.15	.14
Crude, 30%	.08	.07
Cobalt oxide, black	1.25	1.15
Diphenyl guaniden	.36	.33
Diorthotoluolguanidin	.46	.42
Magnesium carbonate	.06½	.05¾
Magnesite, imp.	60.00	58.00
Nickel chloride	.18	.17
Potassium prussiate, yel.	.18	.16½
Tin oxide	.57	.53
DECLINED		
Tin crystals	$0.38½	$0.39
tetrachloride	.26	.27

Jacobs, Chlorine Head

Niagara Alkali's S. W. Jacobs (vice-president) was elected Chlorine Institute president at annual meeting Dec. 19. E. C. Speiden, Isco Chemical vice-president, was elected vice-president and Robert T. Baldwin was reelected secretary-treasurer. Five directors were reelected: Thomas Coyle, John A. Kienle, J. F. C. Hagens, H. M. Hooker and S. W. Jacobs.

Lease of sulfur rights of Lake Peigneur, La., to Jefferson Lake Oil is being attacked by 2 individuals who base their claims on rights supposed to go back to grantees of the land from the Spanish Crown.

October Statistics on Calcium Acetate and Methanol‡

Methanol

	1931 October	1932 October	1933 Sept.*	1933 October	Total 10 mos. (Jan.-Oct.) 1931	Total 10 mos. (Jan.-Oct.) 1932	Total 10 mos. (Jan.-Oct.) 1933
	Gallons						
Refined—							
Wood Distillation—							
Production	56,474	197,534	106,494	163,619	1,469,584	1,212,052	1,288,461
Shipments	105,060	159,491	91,462	175,462	1,549,091	1,065,696	1,059,414
Stocks, end of month	178,607	295,806	459,211	447,222	.....	.....	.....
Synthetic—							
Production	510,432	571,372	1,460,589	1,643,040	6,315,658	6,458,749	6,731,718
Shipments	1,187,529	958,909	1,425,009	1,732,458	5,161,389	4,894,780	8,817,705
Stocks, end of month	2,250,309	3,442,098	1,214,105	1,124,687	.....	.....	.....
Crude—							
Production	183,851	188,405	243,183	312,085	2,857,118	1,887,701	2,404,284
Shipments	†	264,857	225,167	242,320	†	†	2,299,844
Stocks, end of month	582,945	253,055	337,174	406,939	.....	.....	.....

Calcium Acetate

	Pounds						
Production	1,528,792	2,676,740	3,772,243	4,084,061	35,233,742	25,198,740	33,840,354
Shipments	2,172,314	3,756,394	3,021,092	2,628,965	45,955,568	31,708,329	33,741,615
Stocks, end of month	11,908,158	3,319,259	4,929,844	6,385,190	.....	.....	.....

‡33 establishments

Washington

Charging that "backstage lobbying and political considerations," involving promises to grain farmers, were behind the situation, and that although the price of corn fell from 55c to 40c grain distillers increased price of grain alcohol from 35½c a wine gal. to $1.14, 8 companies, producing 25% of the U. S. alcohol total, wired protests to Administration officials against marketing agreement of the distilled-spirits industry. Signers of telegrams sent Dec. 9 were synthetic producers, du Pont and Union Carbide, and blackstrap producers, Publicker, Empire Distilling, Puerto Rico Distilling, Continental Distilling and Syrup Products. Charge was also made that "grain distillers were favored with advance information."

Text of telegram sent to Secretary Wallace:

"Undersigned are opposed to its adoption (the marketing agreement), representing well in excess of 25% of the industry. At a meeting held at the Willard Hotel we learned that those approving of the agreement are confined to those concerns having interests in the manufacture of spirits from grain materials. We are confident that you, upon reviewing the situation, will allow us to continue our present legal status which permits us to sell our pure alcohol for any lawful purpose.

"Manner in which whole situation has been handled, which we are confident you are not aware of, prompts us to urgently request you to review whole situation and grant us privilege of conferring with you on the matter before any final action is taken."

Strong Feeling

In a telegram sent to Mr. Peek charge was made that companies were being deprived of their legal rights "and are being placed at the mercy of the whisky interests." Mr. Peek was told that there were indications that representatives of grain distillers were favored with advance information in drafting of marketing agreement and "we feel that your request that we attend meeting on Dec. 9 is an empty gesture and contrary to New Deal principles for which President Roosevelt stands."

It was said also that 1st notice of marketing agreement, as approved by Secretary Wallace, came on Dec. 6 from the chairman of the distilled spirits committee, which contained statement that an amendment had been proposed by the President's committee. Use of other than grain products is limited to 10%, irrespective of existence of a grain alcohol shortage, such right to be given by permit upon application if the production of grain alcohol is insufficient to meet demands, with the specification that such "allocation to be among concerns executing marketing agreement, accepting code and paying parity."

Syrup Products chairman, Rudolph Spreckels, also wired the President requesting a hearing. Telegram read in part as follows:

"We are willing to pay same processing tax as grain distillers. Therefore grain farmers would receive same benefits whether spirits are produced from grain or other products. I believe importation of foreign grain and/or beverage spirits permitted under proposed agreement would deprive our farmers of a market for their grain far in excess of quantity we would displace by the use of other products. Besides, molasses is a farm product, derived from sugar cane grown within U. S., and should not be discriminated against. I respectfully request that you will personally hear our arguments before final determination of that issue."*

NRA Appointments

F. E. Huhlein has been appointed NRA consumer advisor to the furniture and floor wax and polish industry. R. A. Martino is acting in a similar capacity for the rug chemical processing industry. NRA has appointed Dr. J. S. Gould as labor advisor to this industry; John L. Goshie as labor advisor to the Fullers Earth Producers and Marketers of Southeastern U. S.; and Virgil Bankson as labor advisor to the furniture and floor wax and polish industry.

O. L. Hunt has been named NRA consumer adviser for wood flour manufacturing. Arthur V. Hornbeck, John C. Hornbeck's Sons, Napanock, N. Y., has been named industrial adviser.

Code News

It is thought that the Chemical Alliance Code was close to final approval as the month closed, but as yet it has not received official presidential benediction.

Laundry & Cleaners Allied Trades Association, 393 7 ave., N. Y. City, claiming to represent the majority of firms which sell supplies to the laundry owners and dry cleaners and which includes in its membership roll a large number of chemical companies, presented a code at a public hearing Jan. 8. NRA officials, it is said, have felt that no precedent exists for a distributers' code built around 2 customers (laundry owners and dry cleaners).

Rug chemical processing industry has submitted a code to NRA and a public hearing was held in Washington on Jan. 4.

*Indications were as the month closed that some sort of compromise would be worked out. In some quarters it was felt that a percentage higher than 10 would finally be arrived at.

Company News

American Cyanamid & Chemical on Dec. 1st acquired Maryland Chemical, Baltimore, which, under direction of Samuel M. Leidy, as vice-president and general manager, will be operated as a subsidiary of American Cyanamid & Chemical. Maryland Chemical specializes in heavy chemicals in the Baltimore territory, including Washington.

Du Pont Buys Degreasing Unit

Du Pont has purchased metal degreasing business of Carrier Engineering, Newark, N. J. This business formerly was conducted by Carrier metal cleaning division. Transaction involves sale of patents, trade-marks and good will of Carrier Vapor Degreaser machine and of the well-known solvent, Cecolene, used in connection therewith. R. & H. Chemicals Dept. of du Pont will continue to manufacture Cecolene and is prepared to supply this solvent in any quantities to present users of Carrier Vapor Degreaser equipment. Future orders for Cecolene should be sent to R. & H. Chemicals Dept., du Pont at Wilmington, Del., or to district offices in the following cities: Baltimore, Boston, Charlotte, Chicago, Cleveland, Newark, New Orleans, N. Y. City, Philadelphia, Pittsburgh, San Francisco.

Kelley & Tennant, formerly at Tube Concourse Bldg., Jersey City, removed offices to Springfield, N. J. Ostolit Corp. has been formed at Winchester, Mass., to produce plastic materials. Emil Jacobson, formerly with Panelyte is president, and A. B. Gordee is vice-president and director of research. Carbide added 80 men to the South Charleston plant payroll early last month. Allied has added more workers to the Syracuse plant. No figures have been divulged. Ordinarily about 2,000 are employed. Men called back include 15 draughtsmen. Suprex Corp. of America, Cumberland, Md., has taken out a charter to deal in cellulose nitrate.

Only that portion of Burgess Laboratories formerly located in N. Y. City was involved in move to Freeport, Ill. Madison, Wis. division remains in that city. Mearl Corp. (pearl essence) has opened N. Y. City office at 127 W. 20 st., and plant at Roselle Park, N. J. in charge of H. E. Mattin. American Potash & Chemical has moved from the Woolworth Bldg. to 70 Pine st., N. Y. City.

Coal Tar Chemicals

A Month of Price Increases

As in the case of heavy chemicals spot purchasing of coal tar products declined as the month came to a close while on items advanced in price for '34 consumers took rather large shipments to build up inventories. A sudden spurt of benzol purchasing by chemical companies featured the market in the last week. Activity in most consuming lines showed definite signs of the usual seasonal year-end decline. Automobile production, tire production and the textile operations were off from the levels of October-November.

One outstanding price advance of the month was that in pyridin. Higher replacement costs was the principal reason advanced for the increase. Decline of the value of the dollar expressed in foreign currencies was also largely responsible for the sharp increase in cresylic acid and crude naphthalene.

Aniline oil producers announced a 1½c advance for '34 and rises were also made for '34 contracts on dimethylaniline, dinitrobenzene, dinitrochlorobenzene and dinitrotoluol. Sulfanilic was quoted 2c higher on contract. No change was made in contract prices for nitrobenzene, paranitrotoluol, paratoluidin, R Salt, Schaeffer's Salt and a number of other important intermediates. Phenol contracts were also renewed at previous levels.

As the year closed the outlook for '34 appeared to be most encouraging. In some quarters it is expected that automobile production in '34 will increase 45% above '33. If such an increase does materialize the tire industry will show a decided improvement. An even better year in textiles is confidently anticipated.

Important Price Changes

ADVANCED

	Dec. 31	Nov. 30
Acid cresylic, 95%	$0.50	$0.44
97-99%	.55	.47
Acid sulfanilic	.18	.16
Aniline oil	.15	.13½
Cresol, U. S. P.	.11	.10½
Dimethylaniline	.29	.26
Dinitrobenzene, tech.	.17	.15½
purified	.19	.17½
Dinitrochlorbenzene	.14½	.13
Dinitrotoluol	.15½	.15
Naphthalene, imp. crude	2.15	1.90
Pyridin	1.25	.85
Tar acid oil, 15%	.21	.20
25%	.23	.22

Synthetic Organic Survey

Survey of the production and sale of synthetic organic chemicals has been undertaken by the Tariff Commission, and questionnaires are being mailed to all known manufacturers asking for data on their '33 activities.

Coal Tar Reports Salvaged

Services to coal tar products trades and consumers will be continued in '34 according to C. C. Concannon, chief, chemical division, Bureau of Foreign and Domestic Commerce. These services consist of a monthly statement of imports of dyes and other coal tar products into U. S. together with a weekly bulletin which gives news of the world affecting domestic chemical industry.

Import statement (No. 2865) details imports of dyes and other coal tar products giving quantity and invoice value, countries of origin, bonded warehouse stocks, and other information designed to enable

C. C. Concannon reports continuance of vital industry reports

manufacturers and others interested in the trade to gauge competition from foreign imports, plan purchases, and follow advances in foreign technical progress. The usefulness of this unique service has been demonstrated to the synthetic organic chemical industry as well as to consumer trades, such as those relating to textiles, paper, leather, plastics, rubber and the like as well as to manufacturers of medicinals and pharmaceuticals and industries using flavoring and perfume materials.

November Imports

U. S. November imports of synthetic dyestuffs amounted to 399,227 lbs., valued at $509,442. Volume of imports was 57% larger than that in October. In comparison with November, '32, month's imports were 7% smaller in volume but 29% greater in total value.

Imports of dyes during 1st 11 months amounted to 4,003,136 lbs., valued at $4,397,078. They totaled 10% more in volume and 36% more in value than imports in corresponding period in '32.

Imports of intermediates, medicinals, and other coal tar chemicals in November totaled 109,772 lbs., with a value of $96,345. They were smaller in both respects than those in October and those in November, '32. This year's 11-month total was 35% larger in volume than last year's, and 70% greater in value.

Imports of Synthetic Dyes

	1933		1932	
	Pounds	Value	Pounds	Value
Jan.	314,878	$311,640	297,266	$259,558
Feb.	365,144	369,829	429,298	367,154
Mar.	267,890	257,626	482,545	410,865
April	232,741	229,078	300,144	259,425
May	360,490	352,111	206,225	203,483
June	382,452	389,174	117,792	109,208
July	513,436	567,790	151,089	138,136
Aug.	597,394	682,893	369,327	329,810
Sept.	315,214	401,296	414,161	365,326
Oct.	254,270	326,199	426,057	391,803
Nov.	399,227	509,442	431,739	394,949
Totals	4,003,136	$4,397,078	3,625,643	$3,229,717

Countries of Origin of Dyes

	Percentages—November	
	1933	1932
Germany	63.16	61.33
Switzerland	35.45	38.13
England	1.17	.30
All other	.22	.24

Imports of Medicinals, Photographic Developers, Intermediates, and Other Coal Tar Products

	1933		1932	
	Pounds	Value	Pounds	Value
Jan.	55,087	$40,480	38,622	$26,401
Feb.	137,144	97,944	108,219	80,715
Mar.	177,781	52,090	87,479	63,690
April	179,063	60,366	92,067	72,609
May	90,056	67,574	134,789	31,675
June	172,945	130,904	51,902	44,868
July	167,831	121,199	147,067	41,335
Aug.	255,379	162,354	162,300	52,994
Sept.	181,175	146,924	92,186	61,583
Oct.	136,134	114,390	187,948	67,513
Nov.	109,772	96,345	128,077	97,703
Totals	1,662,367	$1,090,570	1,230,656	$641,086

Coal Tar Products in Bond

	Pounds	
	Dyes and colors	Intermediates
April 30, 1933	1,149,303	768,286
May 31, 1933	912,202	767,599
June 30, 1933	911,904	805,459
July 31, 1933	817,596	598,869
August 31, 1933	936,882	694,044
September 30, 1933	1,111,602	766,680
October 31, 1933	1,203,316	630,702

Soap Field

William L. Schultz, president and director, Lightfoot Schultz, also its founder 25 years ago, has resigned to start soap production under his own name at 358 5 ave., N. Y. City. Marshall Mundheim (son of former Stern Bros. president, N.Y. City department store) will head Lightfoot Schultz. A National Potash Soap Association, a new association of producers from all sections and affiliated with the Association of American Soap and Glycerine Producers, is said to be meeting with great favor. Colgate's suit against Lever Bros., started 3 years ago, involving an injunction on spray drying process of manufacturing soapflakes, will have a trial date set shortly. P. & G.'s tonnage is running 10% above '32 and dollar volume even more. Larkin vice-president, James E. Wilson, has been appointed chairman of the postal affairs of the Buffalo Chamber of Commerce.

Dickelman Elected

Drackett Chemical's C. O. Dickelman has been elected a director of Chicago Association of Manufacturers' Representatives.

Fine Chemicals

No Change In Camphor Rate

Presidential approval has been granted Tariff Commission's report on the tariff status of synthetic camphor. Commission began its investigation in December, '32, and also held a hearing last July. Single domestic producer, du Pont, showed that it had exceeded minimum requirements of the tariff law and the Commission recommended that the present 5c rate be continued.*

Tariff paragraph in quest provides that the rate on synthetic camphor shall be reduced to 1c if the domestic production for the 6 months ended June 17, '33 is not sufficient to supply at least 25% of the total consumption; 30% by June 17, '34; and 50% by June 17, '35.

Statistical matter released by the Commission in connection with the report follows:

Domestic Consumption

	Pounds	
January-June	*Synthetic camphor*	*Natural BB (crude) camphor*
1931	1,783,979	600,471
1932	573,174	1,222,418
1933†	434,437	980,815

Consumption of synthetic in 6-month period covered by commission's investigation was as follows:

1932-33	*Pounds*
December (18-31)	18,635
January	47,483
February	44,086
March	46,708
April	85,510
May	108,090
June (1-17)	46,626
Total	397,138

Imports of Synthetic

	Pounds	*Value*
1928	2,291,984	$821,652
1929	2,774,980	972,135
1930	3,524,990	1,233,715
1931	1,894,016	618,312
1932	1,422,046	394,141
1933 (five months)	169,590	43,590

Imports of Crude Natural Camphor

	Pounds	*Value*
1928	4,384,661	$1,658,769
1929	4,203,795	1,579,562
1930	1,058,213	419,229
1931	2,003,875	714,137
1932	1,799,291	512,993
1933 (five months)	760,052	145,362

Synthetic Camphor Projects

Punjab Ministry of Industry reports synthetic camphor project under way. Japanese exports of camphor are showing expansion, quantity during 1st half of last year being 15,492,000 kin, after 12,406,000 kin of Jan.-June, '32. Values of these exports were 2,494,538 yen and 1,780,227 yen respectively. Quantity to U. K. dropped from 807,000 kin to 719,000 kin, but trade with Germany increased from 34,000 to 84,000 kin. France also increased takings from 502,000 kin to 1,362,000 kin,—and British India from 2,128,000 kin to 4,297,000 kin. U. S., however, remains largest individual market, taking 5,590,000 kin in 1st half of last year.

Spanish reports state that a new attempt will be made to establish a synthetic camphor industry. Old attempt was at Santander based on a new etherification process which proved unsuccessful. New attempt will be based on the Schering process. Recent tests of Spanish turpentine by the Spanish Institute of Forestal Research are said to disapprove belief that it did not lead to high yields of synthetic camphor.

*Natural tariff rate is 1c per lb. Higher rate on synthetic was designed to encourage domestic production. Shift in consumption from synthetic to crude natural is attributed by the commission "principally to the fact that the largest domestic consumer in any form, a subsidiary of the sole domestic producer of synthetic, was substituting natural for synthetic during 1st half of '32 and '33."

Important Price Changes

	Dec. 31	Nov. 30
ADVANCED		
Calcium lactate, U.S.P.	$0.35	$0.29
Chloral hydrate	.85	.75
Ether, acetic	.12	.11½
Iron, reduced, 90%, cases	.85	.75
Potassium hydroxide, U. S. P., sticks	.36¼	.31¼
Sodium hydroxide, U.S.P., sticks	.28¼	.23¼
Sodium perborate, N.F.V.	.18	.17
DECLINED		
Potassium citrate	$0.38	$0.41
Silver nitrate	.31⅝	.31⅞

Price Stability

Price changes were much fewer in December than for several months past. Relative stability of the dollar (when compared with the wild November fluctuations) had a stabilizing influence on prices. Business generally was quite satisfactory and in most quarters reports indicated a decided improvement over the same period a year ago.

Italian Citrate Plans

Camera Agrumaria made an announcement Nov. 22 in which guarantees to the producer of citrate 200 lire per quintal are promised. This price compares with 150 lire which the producer received from the camera last year. If the average gross price at which the citrate is sold during the '33-'34 season falls below 200 lire per quintal, the camera will make up the difference up to a sum not to exceed 100 lire per quintal.

Ministry of Corporations authorized camera to set aside 5,000,000 lire from its reserves to cover eventual differences due producers. This policy of guaranteeing citrate of lime producers a minimum price cost the camera, and hence indirectly the government, 3,000,000 lire last year. The provision also applies to citric acid manufacturers who produce lemon juice or citrate of lime for their own consumption, and thus represents an indirect bounty to these manufacturers.

Camera will advance 100 lire per quintal on citrate of lime delivered to it during '33-'34 up to a maximum total of 5,000 tons. Only citrate actually produced during the current year will be paid at the guaranteed price, and the camera is authorized to carry out any investigations it may consider necessary to control the date of manufacture of citrate of lime during the current year. Arrangements have been made with local banks to discount promptly citrate producers' delivery warrants.

Stocks of the camera are so low—practically only old stocks held prior to 1929, which will not be marketed unless they can be easily absorbed—that no difficulty is expected in disposing of the production of the current year.

Fine Chemical Notes

Cetyl alcohol, useful occasionally in skin therapy, is coming into more general use in commercial face creams, hand lotions, etc. Battle is raging in England as to whether insulin should be classified as a fine chemical. Tariff duty changes are involved.

Employment Declines

Employment slid downhill at a rapid pace in November after several months of sustained advances. November's decline was even greater than the normal seasonal drop. A. F. L.'s Green announced that 580,000 lost jobs and that 6,000,000 are still unemployed.

Chemical factory employment showed a reversed trend Nov. 15 and, according to Bureau of Labor Statistics, had declined 0.6% during month preceding that date. Volume, however, was more than 29% above November, '32, mark. Payroll totals in plants in the chemical group of industries dropped 1.2% between Oct. 15 and Nov. 15, but stood almost 27% above corresponding '32 level. In October-November period, last year, chemical employment gained 0.7%, and payroll totals lost 0.2%.†

Employment in factories in N. Y. State, manufacturing chemicals and related products, was unchanged at the middle of November from its condition a month earlier.

"One-Way" Glass

Frederick A. Delano has patented a "one-way" glass. Things look "rosy" in one direction but decidedly on the "bias" in the other. Are our shade manufacturers on the way out?

Horace Bowker in a United Press survey of business sentiment: "Sentiment in the principal farming areas is probably better today than at any time in the last 3 years."

†For indices see page 79.

Paints, Lacquers and Varnish

Krumbhaar With Beck, Koller

Beck, Koller, Detroit synthetic resin manufacturer, has appointed Dr. Wilhelm Krumbhaar as vice-president in charge of technical development. Dr.

Noted German paint and lacquer authority remains in this country

Krumbhaar's time will be devoted to technical development work in connection with products sold in the U. S.; and he will spend 3 months of each year in a similar capacity in behalf of Beck, Koller & Co. (England) Ltd., whose new manufacturing plant recently began operations at Old Swan in Liverpool. He will also be available for occasional addresses before A. C. S., local Production Clubs, and similar organizations. One of his very recent engagements included a lecture at Yale.

After receiving his Doctor's degree at the famous University of Leipzig, Dr. Krumbhaar began his industrial work as a research chemist, following which he was employed as a factory superintendent for a large European manufacturer, and later operating a paint and varnish plant of his own. He is thoroughly conversant with all of the practical problems confronting formulators in the paint and varnish industry. Dr. Krumbhaar enjoys an international reputation through his work during the last 5 years as head of the Paint & Varnish Institute of Berlin, modeled after the Gardner Institute in Washington; and also through his numerous books on paint and varnish technology and his able contributions to the technical journals in this country and in Europe.

Higher Pigment Prices

Conditions in the various markets for raw paint materials were generally quiet as the month closed. Higher bichromate costs naturally led to sharp advances in chrome yellow and chrome green. On Jan. 1 white lead producers advanced quotations on dry basic carbonate to 6½c per 100 lbs. for 20-ton lots in a single shipment and 6¾c for quantities smaller than 20 tons. Dry basic sulfate is now quoted at 6c in 20-ton lots and 6¼c in smaller quantities. On Jan. 1 the new lithopone schedule became effective. Carlots in bags are quoted at 4½c and 4¾c in barrels. In metropolitan N. Y. and Chicago 5-ton lots are priced at the carlot figures. French process zinc oxides are now quoted at prices ¼c off from the '33 levels. American process schedule remains practically unchanged except that the 2-ton quantity as the dividing line between "inside" and "outside" prices has been discarded and producers now quote base prices for 20-ton lots and differentials for smaller quantities.

Important Price Changes

ADVANCED

	Dec. 31	Nov. 30
Brown Sienna, Italian, raw and burnt, depending on grade	from ¼ to 1⅞¢ a lb.	
Chrome Green, oxide	.22	.19

The '34 contract price on alkali blue toner was advanced 5c to 90c, the former spot quotation. The new schedule for carbon black, announced in detail in the December issue, is now in effect. On Dec. 19 No. 1 quality Spanish red oxide was raised to 3¼c; No. 2, 2½c; No. 3, 2.40c. Prices for all toner reds were repeated for '34. A new schedule on ester gum brings quotations to 5¾c for 10,000 lbs. or more; 6c for 3,000 to 9,999 lbs.; and less than 3,000 lbs. to 6¼c. Stearate sellers offered 90 day contracts at unchanged prices. Italian siennas were higher, from ¼c to 1⅞c, depending upon grade and quality. Colors-in-oil were advanced by most producers on Dec. 15. Domestic whiting producers adjusted prices higher in the same week.

Outlook for '34 is viewed in most quarters with a great deal of enthusiasm. A large increase in the Public Works' Program plus an almost certain increase in private building plus a tremendous backlog of repairs will, it is thought, bring '34 totals far above even the level of the past 6 months which was a distinct improvement over the 1st-half year.

Schedule for barium and calcium base pigments on '34 contracts is as follows:—Bags, minimum 20 tons car lots, 6c per lb.;

Third Quarter Lacquer Sales

Sales in 3rd quarter of '33 were 6,568,896 gals, with a value of $8,890,314 against 5,935,608 gals., valued at $8,044,479, in preceding quarter and 4,475,293 gals., valued at $6,867,544 in corresponding quarter of '32, according to preliminary data compiled by Bureau of Census from 102 manufacturers. Sales of finished lacquer, lacquer thinners and dopes, including sales of package goods to jobbers and dealers, during 3rd quarter of '33, comparisons with preceding quarter and '32 sales, follow:—

	Gallons	*Dollars*	*Gallons*	*Dollars*	*Gallons*	*Dollars*	*Gallons*	*Dollars*
1933								
1st quar.	3,905,846	5,323,315	1,916,350	3,668,615	1,765,148	1,401,624	224,348	253,076
2d quar.	5,935,608	8,044,749	2,938,643	5,561,381	2,708,268	2,152,168	288,697	331,200
†3rd quar.	6,568,896	8,890,314	3,340,182	6,176,543	2,932,826	2,340,847	295,888	372,924
1932								
1st quar.	4,666,420	6,947,508	2,249,069	4,692,055	2,161,317	1,913,937	256,034	341,516
2d quar.	4,475,293	6,867,544	2,337,612	4,823,513	1,968,189	1,796,301	169,492	247,730
3rd quar.	3,578,390	5,382,948	1,778,305	3,593,977	1,601,875	1,515,330	198,210	273,641
4th quar.	3,532,718	5,140,226	1,836,432	3,524,739	1,499,002	1,341,175	197,284	274,312
Total (year).	16,252,821	24,338,226	8,201,418	16,634,284	7,230,383	6,566,743	821,020	1,137,199
1931								
1st quar.	5,622,337	9,504,887	2,835,390	6,524,744	2,565,008	2,602,506	221,939	377,637
2nd quar.	6,712,289	10,966,421	3,265,744	7,399,231	3,153,427	3,038,561	293,118	528,629
3rd quar.	5,515,026	8,641,603	2,727,951	5,791,264	2,521,764	2,456,265	265,311	394,074
4th quar.	4,586,663	7,223,112	2,352,524	5,012,044	2,030,906	1,902,364	203,233	308,704
Total (year).	22,436,315	36,336,023	11,181,609	24,727,283	10,271,105	9,999,696	983,601	1,609,044

*Does not include base solutions used in the manufacture of lacquers.
†Preliminary.

October Paint, Varnish and Lacquer Sales

October sales of paint, varnish and lacquer products totaled $18,944,106 in value, according to monthly report of the Bureau of Census from data supplied by 586 establishments. This compared with $19,097,803 in preceding month and $15,592,377 in the corresponding month last year. January-October sales were $190,370,689 against $181,345,977 in the corresponding period of 1932.

		Classified sales reported by 344 establishments				
		Industrial sales			*Trade sales of*	
1933	*Total sales reported by 586 establishments*	*Total*	*Paint and varnish*	*Lacquer*	*paint, varnish and varnish*	*Unclassified sales reported by 242 establishments*
1933—Jan.	$11,275,396	$3,529,886	$2,386,947	$1,142,939	$4,168,260	$3,577,250
Feb.	11,665,734	3,423,033	2,445,378	977,655	4,771,706	3,470,995
March	13,578,568	3,391,947	2,484,550	907,397	5,788,213	4,398,408
April	19,043,787	4,677,309	3,143,803	1,533,506	8,582,411	5,784,067
May	26,241,044	5,991,938	4,298,455	1,693,483	11,788,573	8,460,533
June	27,813,233	6,827,509	4,832,551	1,994,958	12,443,998	8,541,726
July	22,090,187	6,406,184	4,493,516	1,912,668	8,627,400	7,066,603
August	20,620,811	6,323,475	4,754,701	1,568,774	7,840,359	6,456,977
Sept.	19,097,803	5,544,686	3,975,917	1,568,769	7,462,113	6,091,004
Oct.	18,944,106	4,949,755	3,721,420	1,228,335	7,376,012	6,618,339
1932—Jan.	15,894,506					
Feb.	16,270,822					
March	19,089,005		Comparable data not available			
April	22,612,193					
May	24,981,441					
June	19,637,358	4,685,399	3,617,719	1,067,680	8,734,330	6,217,629
July	14,430,122	3,793,245	2,900,707	892,538	6,058,813	4,578,064
Aug.	16,032,441	3,851,028	3,057,096	793,932	6,918,659	5,262,754
Sept.	16,805,712	3,980,564	3,113,303	867,261	7,216,748	5,608,400
Oct.	15,592,377	3,996,500	3,036,323	960,177	6,610,011	4,985,866
Nov.	12,492,818	3,599,319	2,639,362	959,957	5,196,766	3,696,733
Dec.	9,484,520	3,222,770	2,186,706	1,036,064	3,506,715	2,755,035
Totals	$203,323,315	.....	.....	.....	.....	.....
1931—Totals	278,442,170	.....	.....	.....	.....	.....

barrels, car lots, 6¼c per lb.; bags, l.c.l. 6¼c per lb.; barrels, l.c.l., 6½c per lb. The schedule for titanium dioxide is as follows:—Bags, car lots, minimum 20 tons, 17c per lb.; barrels, car lots, 17¼c per lb.; 5 ton lots, 17½c to 17¾c per lb.; single-ton lots, 18c to 18¼c per lb.; and less than tons, 18½c to 18¾c per lb.

Zinc oxide prices effective for domestic oxides Jan. 1 are: American process, lead-free, 5¾c per lb. in car lots, 6c per lb. l.c.l.; 5, 10 and 25% leaded, 5½c per lb. in car lots, 5¾c per lb. l.c.l.; 35% leaded, 5c per lb. in car lots, 5¼c per lb. l.c.l. These prices are for material in bags and barrels are chargeable at ¼c per lb. additional. French process oxides, lead-free, 5½c per lb. in car lots, bagged; 5¾c per lb. in car lots, barrels; and 6c per lb. in barrels, l.c.l. French process, red seal, 8⅜c per lb. in bags, car lots; 9⅝c per lb. in barrels, car lots; 9⅝c in bags, l.c.l.; and 9⅞c per lb. in barrel, l.c.l. French process, red seal, 8⅜c per lb. in bags, car lots; 8⅝c per lb. in barrels, car lots; 8⅝c per lb. in bags, l.c.l.; and 8⅞c per lb. in barrels, l.c.l. French process, white seal, 10⅝c per lb. in barrels, car lots; 10⅞c per lb. in barrels, l.c.l.

Carbon Black Schedule

As stated previously carbon black producers have divided country into 7 marketing zones and car lot prices for standard grades of black, for the 1st quarter of the year, are as follows:—Zone A, including Gulf Coastal ports, Galveston, Houston, Port Arthur, New Orleans, etc., for Coastwise delivery in North America, 4.45c per lb.; Zone B, including Texas (except Coastal ports), New Mexico, Colorado, Kansas, Arkansas, and part of Missouri, 4.75c per lb.; Zone C, Pacific Coast States, 4.90c per lb. in car lots, minimum 50,000 lbs., and 5.05c per lb. in car lots, minimum 30,000 lbs.; Zone D, including Iowa, Illinois and Wisconsin, 4.90c per lb.; Zone E, including Ohio, Kentucky, Indiana, West Virginia, Michigan, Tennessee, Georgia, Florida and parts of Michigan, Pennsylvania and New York (virtually the Central Freight Association territory), 5.05c in carlots; Zone F, including Atlantic seaboard states of South Carolina, North Carolina, Virginia, Maryland, New York, Vermont, New Jersey, New Hampshire, Maine, Massachusetts, Rhode Island and part of Pennsylvania, 5.35c per lb.; Zone G, including Mexico, 5.30c per lb. Prices are for carlots, delivered by rail in bags, and apply to standard grades only. Buyers may purchase black for water shipment to Coastal points at 4.45c per lb., f.o.b. Gulf ports plus water freight charges. Deliveries out of sellers' warehouses or l.c.l. quantities will be charged at 6½c per lb. for carlots, bags; 7¼c per lb. in cartons; and 7¾c per lb., cases.

McFadden Resigns

Thomas J. McFadden has resigned as general manager of the National Paint, Varnish and Lacquer Association and will resume law practice in the office of William J. Donovan. Mr. McFadden was assistant to the late George V. Horgan, and on the latter's sudden death last May, in the midst of the details attending the formulating of the paint code, jumped into the breach and carried through the arduous job. He was subsequently appointed as general manager. His desire to return to law practice is the sole reason for his resignation.

Paint Company News

Charles Hoover, formerly with Dannebaum Paint, San Francisco, has formed Golden West Paint, Emeryville, Cal. Another new company is Kessler's Paint, New London, Conn. Utility Color, Newark, N. J., is the new name of Utility Color & Chemical. National Lead's Brooklyn lead oxide plant was slightly damaged by fire Dec. 14. Oxford Tripoli Sales has moved sales office from Brooklyn to 60 E. 42 st., N. Y. City. Glidden showed a net profit of $1.58 a share for year ended Oct. 31. Patterson-Sargent showed a profit of $221,416 for year ended Oct. 31. Ault & Wilborg has moved Chicago offices to 1240 West Washington Blvd. Fire broke out in the Glidden lacquer plant in Cleveland on Dec. 27. Steelcote, Mfg., St. Louis, has been cleared by the Federal Trade Commission in a matter involving advertising of one of the company's products. Felton, Sibley, Philadelphia paint and varnish producer, recently celebrated its 70th anniversary.

Personnel

John J. Richmond succeeds Norman H. Wolbach as United Color's Cincinnati representative. R. C. Rollins, formerly with Miller & Graham, Baltimore, is Jones-Dabney sales representative, grinding liquids division, for the Atlantic Coast states. Fred L. Lavanburg has made Selden G. Hait and Jacob Bloch assistant vice-presidents; Austin J. Farrey, assistant treasurer; and Jacob Ebert, assistant secretary. Martin-Senour, Chicago, has appointed P. C. Frayser manager of sales development. He is a former National Paint, Oil & Varnish Association president. A. H. Brownell has been appointed general manager, H. D. Taylor Co. (Buffalo wholesale paint house). Dr. Calvin A. Knauss, former John Lucas director of research, and president, Philadelphia Paint & Varnish Club, is now sales-service director for Nuodex Products. Dewey L. Pierce has been elected president, F. O. Pierce Co., Brooklyn paint producer. Debevoise Co., Brooklyn, has appointed Julio F. Sorzano sales manager. He was formerly with Standard Varnish and Toch Bros. and before that with Arco, Cleveland.

Stephen Babcock, formerly in charge of resin sales for John D. Lewis, Inc., is now with General Plastics as special representative handling oil soluble resins.

Club Activities

N. Y. Paint & Varnish Production Club heard Dr. Krumbhaar, now of Beck, Koller, and Henry A. Gardner, director of the Institute of Paint and Varnish Research, at its meeting Dec. 21. L. Roon, Nuodex technical director, spoke on naphthenates before the Montreal Production Club on Dec. 8. New England Paint Club Christmas Party was held Dec. 14. Chicago Paint, Oil & Varnish Club is now officially known as the Chicago, Paint, Varnish & Lacquer Association.

Deaths

William Joseph Parr, 61, president, Parr Paint & Color, Cleveland, died Nov. 9. Fred. R. Fortmeyer, 81, former National Lead treasurer, died Dec. 23.

Trigg In Washington

Ernest T. Trigg, National Paint, Varnish & Lacquer Association president, will visit paint production clubs on the Pacific Coast late in January.* Mr. Trigg has severed all active connections with John Lucas but will have the title of chairman of the board. W. A. Gorrell, formerly with S.-W. at Cleveland, has been elected Lucas president. On Dec. 2 Mr. Trigg met in Washington with re-

*Pressure of Washington offers will delay tour.

Shellac Prices. Weekly High-Low

	London		Calcutta	N. Y. City					Shellac Varnish, N. Y. City					
		U. S. Cents							Orange			White		
Dec. High-Low	March High-Low	Dec.	March	T.N.C. & F. N. Y.†	Bone Dry 10 bbls.	Bone Dry 5-9 bbls.	Bone Dry 1-4 bbls.	T. N.	Superfine	Garnet	5-lb. cut	4½ lb. cut	4 lb. cut	5 lb. cut	4½ lb. cut	4 lb. cut
Close Nov. 29.. 59s	58s			11c	.24	.25	.26	.15–.15¾	.16–.16¾	.16–.17	1.00	.95	.90	1.25	1.20	1.15
Dec. 1..... 61s 6d–57s 6d	58s 6d–57s 6d	12.4	12.6	11	.24	.25	.26	.15–.15¾	.16–.16¾	.16–.17	1.00	.95	.90	1.25	1.20	1.15
Dec. 8..... 65s 57s–6d	65s—58s	14.1	14.1	12	.24	.25	.26	.15–.15¾	.16–.16¾	.16–.17	1.00	.95	.90	1.25	1.20	1.15
Dec. 15..... 72s–65s	76s–65s	16.1	16.1	14¾	.26	.27	.28	.17–.17¾	.18–.18¾	.18–.18¼	1.10	1.05	1.00	1.35	1.30	1.25
Dec. 22..... 78s 6d–74s*	79s 6d–74s 6d	16.4*	16.7	14¾	.26	.27	.28	.17–.17¾	.18–.18¾	.18–.18¼	1.10	1.05	1.00	1.35	1.30	1.25
Dec. 29..... 80s 6d–76s*	82s–77s	*		16⅛	.26	.27	.28	.17–.17¾	.18–.18¾	.18–.18¼	1.10	1.05	1.00	1.35	1.30	1.25

*May prices; †per cwt.

gional vice-presidents of the Association. At the moment he is directing a special drive for new members.

Personal

James L. Parsons, president, Pacific Laboratories, and G. Harry Miller, company technical director, were elected members of Portland Paint, Oil & Varnish Club. Pacific Laboratories is the largest lacquer producer in the Far West.

Wiley B. Bryant, president, Charles R. Long, Jr., Paint Co., Louisville, is a director of the Associated Industries of Kentucky.

Schumacher With Glyco

John W. Schumacher, 235 Woodland ave., Detroit, formerly Acme White Lead chemist and later connected with United Color & Pigment, has been appointed sales representative for Glyco Products. He will specialize in the newer synthetic resins, waxes, and emulsifying agents for Detroit district.

Flaxseed Trading Light

Trading in flaxseed futures in primary centers moved within very narrow limits during the past month. Largely for this reason linseed quotations remained fairly steady despite some slackening in demand in several quarters.

Final government flaxseed crop report places yield at 6,785,000 bu., compared with an estimate of 7,451,000 bu. in November and a production of 11,671,000 bu. last season. The past season has been one of the most disasterous crop failures in years. The 30 year flaxseed average is 19,151,000 bu.!

Preliminary report by the Argentine Government of the '33 flax crop, indicates a production of 53,480,000 bu. Carryover of old crop seed amounts to 1,000,000 bu., and after deducting 7,000,000 bu. for home needs, Government report concludes that 47,480,000 bu. will be available for export in '34. This figure is slightly less than last year's estimate and only two-thirds of the '31 figure. Harvesting continues in the northern districts, especially in the Provinces of Cordoba, Santa Fe and northern Entre Rios. Yields are unsatisfactory, but some improvement is expected from the more southerly districts.

In 12 out of 15 of the principal flax growing countries this '33 production, according to the official estimates, is 79,350,000 bu. as compared with 85,057,000 bu. in '32 and 121,166,000 in '31. Only important countries not included in the above totals are Poland, which usually raises something under 2,000,000 bushels, and Morocco, where production is somewhere between 500,000 and 1,000,000 bu. Third omission is Russia where, according to the Dec. 14 letter of the Bureau of Agricultural Economics, area planted to flaxseed this year up to June 10 was reported to be 6,348,000 acres, or 734,000 acres less than the acreage planned.

All things considered the market for linseed would appear to be entering a much stronger position for '34. The combination of a flaxseed crop which has run very much below the general average and the strong possibility of better tonnages of oil going to the paint, varnish, linoleum and other consuming industries has given the market an extremely bullish tone.

Linseed A.A.A. Hearing

A. A. A. hearing on code of the linseed crushers, held Dec. 6, indicated some opposition from companies on the West Coast who objected to the Linseed Oil Manufacturers' Association as the code authority of the flaxseed crushing industry. L. I. Barlow, Pacific Nut Oil, stated that there were a number of West Coast companies which had crushing capacity and would engage in that activity if the increased flax crop of the Imperial Valley materialized.

Northwest flaxseed farmers have asked for drastic action to restrict importation of linseed oil and substitutes for it and to restore the export market for linseed cake. An absolute embargo is asked by certain groups. Holland, until recently U. S.'s best linseed cake customer, has restricted imports to 25% of volume of recent years. Holland gin for linseed cake is the latest proposal.

Statistics recently released by the Dominion Bureau of Statistics indicate

Domestic Flaxseed Receipts By Weeks

Week Ending	Dec. 8 1933	Dec. 8 1932	Dec. 15 1933	Dec. 15 1932	Dec. 22 1933	Dec. 22 1932	Dec. 29 1933	Dec. 29 1932
Minneapolis cars	22	11	22	17	21	49	23	39
Duluth cars	8	48	5	40	11	60	7	60
Winnipeg cars	16	22	8	10	5	8	7	14
Totals to date this crop*	2,881	6,141	2,916	6,208	2,953	6,325	2,990	6,438

*Aug. 1.

Flaxseed Prices in Primary Centers

	Minneapolis			Duluth			Winnipeg			Buenos Aires	
Week Ending	Cash	Dec.	May	Cash	Dec.	May	Cash	Dec.	May	1933	1932
Close Nov. 29	1.79½	1.74½	1.80½	1.75	1.75	1.82	1.37	1.37	1.44½	1.15⅞	.58¼
Dec. 1	1.78¼	1.73¼	1.79	1.72½	1.72¾	1.79¼	1.37¼	1.37¼	1.44¼	1.04⅜	.58⅜
Dec. 8	1.74	1.69	1.75	1.70	1.68	1.75	1.40½	1.40½	1.45	1.03½*	.57½
Dec. 15	1.74½	1.69¼	1.75¼	1.70¼	1.70¼	1.75¼	1.42½	1.42½	1.44¾	.99¾	.60⅛
Dec. 22	1.77¾	1.73¾	1.77¾	1.78	1.75	1.78	1.42½	1.42½	1.44½	1.00⅞	.60½
Dec. 29	1.80½	1.75	1.80¼	1.79½	1.76½	1.79½	1.42¼	....	1.44¼	.99⅝	.60⅞
Close Dec. 30†	1.81½	1.75½	1.79½	1.80½	1.78½	1.80½	1.44½	1.42½	1.44¼	Holiday	....

*Dec. 8 holiday, price is that of Dec. 7; †Last trading session.

Minneapolis Linseed Oil and Meal Shipments

Week Ending	Oil in Pounds 1933	Oil in Pounds 1932	Meal in Pounds 1933	Meal in Pounds 1932
Dec. 1	749,611	821,945	1,911,030	2,363,768
Dec. 8	148,850	714,948	1,952,280	2,361,307
Dec. 15	219,410	553,651	2,193,322	2,287,538
Dec. 22	344,920	441,976	1,854,811	1,554,370
Dec. 29	125,860	464,362	1,508,753	1,259,875
Totals to date	10,868,521	18,379,267	30,834,644	42,281,029

Linseed Oil Prices, Minneapolis, London, San Francisco & Chicago

	Minneapolis		London Weekly High-Low			San Francisco		Chicago		N. Y. City	
Week Ending	Carlots	Tanks	High		Low	Carlots	Tanks	Carlots	Tanks	Carlots	Tanks
Dec. 1	9.5c	8.9c	19s	4½d	18s 7½d	9.8c	9.2c	9.5c	8.9c	9.5c	8.9c
Dec. 8	9.7	9.1	18s	9d	18s	10	9.4	9.5-9.7	8.9-9.1	9.5	8.9
Dec. 15	9.7	9.1	18s	10½d	17s 10½d	10	9.4	9.5-9.7	8.9-9.1	9.5	8.9
Dec. 22	9.7	9.1	19s	4½d	19s	10	9.4	9.5-9.7	8.9-9.1	9.5	8.9
Dec. 29†	9.7	9.1	19s	3d	18s 10½d	10	9.4	9.7	9.1	9.3	8.7

*per cwt.; †last trading day of the year.

Buenos Aires Flaxseed Shipments, Stocks

	Exports in Bushels*						Total Same	Since January 1*					Total*		Visible Supply*	
Week Ending	U.S.	U.K.	Cont.	Orders	Others	Total	Week '32*	U.S.	U.K.	Cont.	Orders	Others	1933	1932	1933	1932
Dec. 1	59	4	311	402	31	807	1,847	8,862	821	17,946	23,088	1,531	52,248	78,497	1,575	3,937
Dec. 8	106	..	181	185	..	472	1,060	8,968	821	18,127	23,273	1,531	52,720	79,557	1,575	4,331
Dec. 15	67	..	138	197	..	402	472	9,035	821	18,265	23,470	1,531	53,122	80,379	1,575	4,724
Dec. 22	220	..	268	386	63	937	1,378	9,255	821	18,533	23,856	1,594	54,059	81,757	2,165	5,118
Dec. 29	79	4	409	1,012	..	1,504	1,696	9,334	825	18,942	24,868	1,594	55,563	83,453	2,362	5,512

*000 omitted.

Indian Flaxseed Shipments

	Exports in Bushels*				Same Week Last Year*				Since April 1, 1933*			Since April 1, 1932*			Total*	Total*
Week Ending	U.K.	Cont.	Others	Total	U.K.	Cont.	Others	Total	U.K.	Cont.	Others	U.K.	Cont.	Others	1933	1932
Dec. 1	44	32	...	76	8	16	...	24	7,380	2,768	776	360	1,420	240	10,924	2,020
Dec. 8	244	76	308	628	4	92	...	96	7,624	2,844	1,084	364	1,512	240	11,552	2,116
Dec. 15	204	80	184	468	...	32	40	72	7,828	2,924	1,268	396	1,552	280	12,020	2,228
Dec. 22	256	24	204	484	24	80	..	104	8,084	2,948	1,472	420	1,632	280	12,504	2,332
Dec. 29	...	..	...	...	256	24	204	484	8,084	2,948	1,472	428	1,632	280	12,504	2,340

*000 omitted.

that during the year 8 plants produced linseed oil in Canada—3 in the Province of Quebec, 2 in Ontario, 2 in Manitoba and 1 in Alberta. Total capital invested in the industry was $2,690,475, with a total output of 3,557,383 gals. of raw, boiled and special linseed oil having a selling value at the mills of $1,935,820. Imports for year totaled 86,171 gals., whereas exports amounted to only 1,288 gals. After addition of production and imports quantities and subtracting exports quantity available for domestic consumption was 3,642,266 gals.

Pure linseed oil putty has been advanced to 5c per lb. in tubs and the commercial to 2¾c from the previous 4¼c and 2¼c. Putty in cans was also put higher, the increased cost of cans adding to the upward move necessitated by higher raw material costs.

Solvents, Petroleum Chemicals

Acetone Goes Higher

A complete revision in drum prices for the various methanol grades was announced late in the month. No change was made in tankcar quotations. The new schedule is as follows:—95%, tanks, 33c per gal.; drums, carlots, 37½c; less than carlots, 40c; 97%, tanks, 34c; drums, carlots, 38½c; less than carlots, 41c; pure, tanks, 35½c; drums, carlots, 40c; less than carlots, 42½c. Quotations for barrel packing were 2½c per gal. above drum prices. Quotations given apply in what is called the Eastern Zone, practically all the territory East of the Mississippi. West and South of that river, slightly higher rates prevail.

Methyl acetone drum prices were also revised. Tanks remained at 50c; drums, carlots, 54½c; l.c.l. drums, 57c. Synthetic and natural quotations were identical. Trend in the market for petroleum solvents was mixed. The advances and declines registered for the month are shown.

Acetone prices were advanced 1c for early '33 deliveries. Tanks are now 10c; drums, carlots, 11c; and l.c.l. drum lots, 11½c. Butyl alcohol, butyl acetate and ethyl acetate prices were renewed for the 1st quarter of '34.* Shipments in December were off as automobile production dropped, but an immediate pick-up is looked for early in January following the N. Y. Show.

Important Price Changes

	Dec. 31	Nov. 30
ADVANCED		
Acetone, tanks	$0.10	$0.09
drums, carlots	.11	.10
l. c. l. drums	.11½	.10½
Methanol, 95% drums, carlots	.37½	.37
l. c. l.	.40	.39
97% drums, carlots	.38½	.38
l. c. l.	.41	.40
Pure, drums, carlots	.40	.39½
l. c. l.	.42½	.41½
Denaturing grades	.44½	.44
Methyl acetone, drums, carlots	.54½	.54
l. c. l.	.57	.56
Rubber solvent, Group 3	.06⅞	.06¾
Stoddard solvent, Group 3	.06⅜	.05½
Naphtha, V. M. & P., Group 3	.06⅞	.06½
DECLINED		
Cleaners' Naphtha, Group 3	$0.06⅞	$0.07
Lacquer, diluents Group 3	.07⅛	.08
Petroleum thinner, Group 3	.05⅜	.05½

Sun's Solvent Booklet

Sun Oil, Philadelphia, has published a booklet describing advantages to manufacturers of paints, varnishes and enamels in using Sunoco spirits. Entitled "Seven Points of Superiority of Sunoco Spirits, book contains a number of graphic charts and illustrations showing the 7 points referred to, these being described as uniform and high solvency, no separation, easier wetting, cold weather insurance, reduced fire hazard, costs cut, and a balanced thinner.

*Alcohol prices remain unchanged for 1st quarter of '34.

†Bleached shellac manufacturing code hearing is scheduled for Jan. 18.

Crude Oil Production, December

	Federal Agency Allowable Effective Dec. 1 1933	*Actual Production Week Ended Dec. 2 1933*	*Week Ended Dec. 9 1933*	*Week Ended Dec. 16 1933*	*Week Ended Dec. 23 1933*	*Week Ended Dec. 30 1933*
Oklahoma	457,000	421,750	501,500	549,950	505,800	395,450
Kansas	112,000	114,700	109,050	107,000	106,350	109,850
Panhandle Texas	.....	40,050	43,750	42,700	40,650	40,400
North Texas	.....	57,250	57,100	57,500	57,350	57,450
W. Central Texas	.....	23,950	24,050	23,900	23,850	23,950
West Texas	.....	121,300	120,850	121,100	120,350	119,600
E. Central Texas	.....	43,300	43,350	43,200	42,950	43,250
East Texas	.....	397,150	399,250	399,800	402,850	406,800
Conroe	.....	51,600	53,900	56,100	55,200	55,500
Southwest Texas	.....	43,550	43,350	42,000	43,300	40,600
C'stal Texas (not includ. Conroe)	.....	101,050	105,650	104,000	104,100	103,450
Total Texas	888,000	879,200	891,250	891,200	840,600	891,000
North Louisiana	.....	26,300	26,050	25,650	25,600	26,200
Coastal Louisiana	.....	47,500	47,300	46,500	45,200	42,050
Total Louisiana	69,300	73,800	73,350	72,150	70,800	68,250
Arkansas	33,000	32,250	32,600	32,450	32,200	32,300
Eastern (not including Mich.)	94,200	97,200	94,750	90,850	95,950	89,500
Michigan	29,000	28,450	30,200	31,550	29,900	27,300
Wyoming	.....	29,950	29,200	29,350	29,350	29,400
Montana	.....	7,000	6,900	6,550	6,550	6,000
Colorado	.....	2,600	2,450	2,450	2,450	2,400
Total Rocky Mt. States	36,300	38,550	38,550	38,350	38,350	37,800
New Mexico	41,200	42,150	42,100	42,050	42,050	42,000
California	450,000	467,000	504,400	497,400	477,900	446,400
Totals	2,210,000	2,195,050	2,317,750	2,356,950	2,289,900	2,139,850

New Construction

This month's construction news does not contain any such startling pronouncement to compare with the Mathieson Alkali Lake Charles project, reported in November, but after all such major construction is really "news" only because of being rare. Stone and Webster Engineering has been awarded the contract.

Detroit Soda Products is erecting new 2-story building for packing dept. Salt brine will be brought to Southern Alkali's plant through a 60 mile pipe-line. Southern Pipe Line, subsidiary of Southern Alkali, recently purchased a salt dome near Benevides and has begun construction on wells and pipe-line. Work on the plant and water terminals is progressing satisfactorily. Glidden's subsidiary, Chemical & Pigment, is adding a 2-story building to its Baltimore plant. Another subsidiary, Wilhelm Paint, Reading, Pa., is to build a $75,000 addition. J. Bosley Thomas and Harry W. Taylor, formerly of Davison Chemical, have formed Thomas & Taylor and are building a new plant at Baltimore for manufacturing a concentrated plant-food.

Gums, Waxes, Shellac

Foreign shellac markets assumed very strong tendencies in the past month and prices for some grades in Calcutta were almost as high as spot quotations. Various grades were advanced on spot prices in the week ending Dec. 15, the rise in bone dry amounting to 2c. Despite this increase further advances are looked for shortly and consumers with contracts took heavy shipments as the end of the month approached and the general situation became clearer.†

Comparatively few price changes were recorded in either the wax or gum markets. Comparative quiet condition of the exchange was largely responsible for this situation. Competition was rather keen in Japan. Candelilla, on the other hand, was strong. Spot stocks of both gums and waxes in this country at the year-end were reported to be rather small, indicating a firm position for early '34.

Important Gum Price Changes

	Dec. 31	Nov. 30
ADVANCED		
Arabic, amber sorts	$0.08	$0.07¾
Benzoin, Sumatra	.21	.20
East Indies chips	.04½	.04¼
Pontianak, genuine chips	.07¼	.07

Naval Stores

Low Grades Net a Loss

Buying in the primary centers was largely of a routine nature as the month drew to a close. Consumers apparently were not keen to enter the new year with large inventories. However a fair tonnage changed hands. Some rush for January bookings came in in the last days of the month. Price movement during the 30 day period was mixed, the lower grades B, D, and E showing substantial losses while the higher grades showed very slight gains. A small net appreciation for the month was made in turpentine. On Dec. 5 FF wood rosin was reduced 10c, the new quotation being $3.90 per 280 lbs. gross or 235 lbs. net, f. o. b. Southern shipping points, in carlots. Last previous price change was made on Sept. 19.

Official November export figures show that November, '33 was ahead of '32 by a wide margin and in fact was the best November in 4 years. Increase in exports of turpentine in the past 8 months has amounted to about 30% above last year. Increase in rosin is about 15%.

Sentiment in the primary centers is decidedly bullish over the outlook for '34. Higher prices and expanding markets are confidently looked for. It is felt in most quarters that the next crop will at least not exceed the one now closing and that, therefore, the statistical position will not be aggravated by surpluses. Further, the decidedly better tone in most of the European countries leads to the belief that exports business will improve.

A certain amount of uncertainty is in the air due to the present status of the proposed marketing agreement and the distributors' code. But in most quarters it is felt that these questions are ones of detail only and will shortly be worked out. The main point is that business recovery is apparent.*

A. A. A. Approval

Three amendments, proposed at the public hearing in Jacksonville, Fla., on Nov. 20, have been incorporated in the approved draft. They are: (1) Licensing of producers under the code; (2) establishment of forest conservation measures to prohibit the sale of naval stores from small trees; (3) mutual agreement among producers that all gum turpentine and gum rosin which they may deliver to public warehouses for sale in Jacksonville or Savannah shall be disposed of only by sale over the Jacksonville Chamber of Commerce or the Savannah Board of Trade when so required by the control committee.

Production stabilization and controlled sale of turpentine and rosin through a control committee selected by the industry, with the approval of the Secretary, is provided in the code. This control committee would be composed of 3 members from Georgia, 3 from Florida, one from the Carolinas, and one from Mississippi, Louisiana or Texas.

Agreement, submitted by the gum turpentine and gum rosin producers, also provides for marketing quotas, with 2%

Statistics of the Jacksonville Market

Grade	Close Nov. 29	Dec. 9	Dec. 16	Dec. 22	Dec. 29*	Same time as Last Year	Net Gain or Loss Past Month	Net Gain or Loss from a Year Ago
B	3.65	3.50	3.40	3.40	3.25	1.75	— .40	+1.50
D	3.65	3.55	3.45	3.45	3.35	2.00	— .30	+1.35
E	3.70	3.60	3.52½	3.50	3.55	2.40	— .15	+1.15
F	3.72½	3.65	3.62½	3.65	3.75	2.55	+ .02½	+1.20
G	3.75	3.70	3.67½	3.65	3.80	2.60	+ .05	+1.20
H	3.80	3.75	3.72½	3.72½	3.85	2.62½	+ .05	+1.22½
I	3.87½	3.80	3.77½	3.75	3.90	2.65	+ .02½	+1.25
K	3.95	3.90	3.90	3.87½	4.05	3.10	+ .10	+ .95
M	4.05	4.10	4.10	4.15	4.25	3.65	+ .20	+ .60
N	4.15	4.15	4.20	4.20	4.25	3.85	+ .10	+ .40
W.G	4.20	4.20	4.20	4.25	4.30	4.40	+ .10	— .10
W.W	4.60	4.60	4.65	4.55	4.65	5.10	+ .05	— .45
X	4.60	4.60	4.65	4.55	4.65	5.10	+ .05	— .45
Market	Firm	Firm	Firm	Firm	Firm	Firm		
SPIRITS OF TURPENTINE								
Price	42¼c	42¼c	41¾c	42c	43c	37½c	+¾c	+5½c
Market	Firm	Firm	Firm	Firm	Firm	Firm		

*No trading Dec. 30.

	Spirits		Rosin		Same as Last Year Spirits		Rosin	
Week Ending	Receipts	Sales	Receipts	Sales	Receipts	Shipments	Receipts	Shipments
Dec. 9	1,981	2,542	8,220	5,217	1,910	381	7,655	6,187
Dec. 16	1,568	2,032	8,382	3,757	1,883	402	8,478	19,211
Dec. 22	1,609	321	7,214	5,174	1,420	1,760	5,793	3,791
Dec. 29	1,132	208	6,589	15,046	1,119	101	5,709	2,372
This month	7,126	6,785	34,668	36,103	7,008	7,157	31,311	39,575
Since April 1	97,711	99,805	371,595	404,459	87,692	84,604	327,980	326,412
Foreign	.....	83,530	.....	273,649	.....	65,845	.....	223,648
Domestic	.....	16,275	.....	130,810	.....	18,759	.....	102,764

Stocks	Spirits	Rosin	Same as Last Year Spirits	Rosin
April 1	36,712	116,429	41,691	155,883
Nov. 29	34,278	84,990		
Dec. 29	34,618	83,565	44,335	156,005

Statistics of the Savannah Market

Grade	Close Nov. 29	Dec. 2	Dec. 9	Dec. 16	Dec. 23	Dec. 29*	Same time as Last Year (Dec. 28, '32)	Net Gain or Loss Past Month	Net Gain or Loss from a Year ago
B	3.60	3.60	3.50	3.30-40	3.40	3.25	1.75	— .35	+1.50
D	3.65	3.60	3.55	3.45	3.45	3.35	2.00	— .30	+1.35
E	3.70	3.65	3.60	3.50-52½	3.50	3.55	2.35	— .15	+1.20
F	3.72½	3.67½	3.65	3.55-62½	3.62½	3.75	2.50	+ .02½	+1.25
G	3.75	3.72½	3.70	3.65-67½	3.67½	3.80	2.52½	+ .05	+1.27½
H	3.80	3.72½	3.75	3.65-72½	3.72½	3.85	2.57½	+ .05	+1.27½
I	3.87½	3.80	3.80	3.75-77½	3.75	3.90	2.60	+ .02½	+1.30
K	3.95	3.90	3.90	3.85-90	3.90	4.05	3.10	+ .10	+ .95
M	3.95	3.90	4.10	4.10	4.15	4.25	3.62½	+ .30	+1.62½
N	4.15	4.15	4.15	4.15-20	4.20	4.25	3.85	+ .10	+ .40
W.G	4.15	4.15	4.20	4.25	4.25	4.30	4.45	+ .15	— .15
W.W.	4.60	4.60	4.60	4.65	4.60	4.65	5.10	+ .05	— .45
X	4.60	4.60	4.60	4.65	4.60	4.65	5.10	+ .05	— .45
Market	Firm	Firm	Firm	Firm	Firm	Firm			
Price	42¼c	42¾c	42½c	41½c	41¾c	42¾c	36¾c	+½c	+6c
Market	Firm	Firm	Firm	Firm	Firm	Firm			

*No trading Dec. 29.

	Spirits		Rosin		Same as Last Year Spirits		Rosin	
Week Ending	Receipts	Sales	Receipts	Sales	Receipts	Shipments	Receipts	Shipments
Dec. 2	1,801	516	8,716	5,441	1,352		6,563	
Dec. 9	2,035	642	9,741	5,872	1,548		7,425	
Dec. 16	1,775	698	8,628	5,599	1,797		8,668	
Dec. 23	1,805	691	7,927	4,047	1,248		4,992	
Dec. 29	1,568	372	6,700	4,017	1,284		5,746	

Stocks	Spirits	Rosin
Nov. 29	17,406	101,231
Dec. 29	16,431	106,730

Statistics of the Pensacola Market

Week Ending	Turpentine Receipts	Turpentine Shipments	Turpentine Stocks	Rosin Receipts	Rosin Shipments	Rosin Stocks
Dec. 2	681	162	28,775	2,836	1,811	23,522
Dec. 9	514	162	29,187	2,358	2,465	23,425
Dec. 16	677	323	29,541	2,491	1,928	23,988
Dec. 23	644	51	30,134	2,636	2,139	24,577
Dec. 29†	248	162	30,220	1,355	5,364	20,476

†Last trading day of the year.

London Naval Stores Market

Week Ending	Rosin Weekly High—Low W. W. Grade	Turpentine Weekly High—Low	American Stocks	Turpentine
Close Nov. 30	17s 6d	42s 6d		
Dec. 1	17s 6d—14s	43s—41s 9d		
Dec. 8	17s 6d	43s—42s 6d	17,297	22,742
Dec. 15	17s 6d	43s—42s 6d	15,724	21,777
Dec. 22	17s 6d	42s 6d	16,173	21,057
Dec. 29†	17s 6d	42s 6d	17,269	21,509
Net Gain or Loss				

†Last trading day of the year.

*See page 75 for Rosin-Turpentine Export Figures—April-October.

of the annual allotment reserved for new producers.

A proposed marketing agreement for the naval stores industry has received the tentative approval of Secretary Wallace before submission to the industry for signature, the A. A. A. announced Jan. 3.*

Columbia Naval Stores' vice-president, Harry Bruen, is recovering from a serious illness. D. A. Sapp, vice-president, Operators Factorage, has returned after 6 weeks in the hospital following an automobile accident.

J. D. Russ, president, West Florida Naval Stores, Pensacola, died Dec. 29. Henry M. Smith, well known in Southern naval stores industry, died Dec. 24.

Coastal Turpentine has been formed at Savannah by P. J. Rooney, J. W. Lloyd and A. H. Croon.

November steam naval stores production of wood and stocks of these products on hand Nov. 30, according to data collected by the producers' committee, through Arthur Langmeier, of Hercules Powder, secretary, were:—

Production

	Rosin 500-lb. bbls	Turpentine (50 gallons)	Pine oil Gallons
Month of November	43,197	6,880	269,719
Total from April 1, 1933	309,836	48,603	1,981,788

Stocks at Plants

Total, November 30, 1933	71,058	14,078	.....
March 31, 1933	98,615	12,387	.....
Change	—27,557	+1,691	.....

Note.—Rosin production and stocks include all grades of wood rosin.

*Rosin sales will be based on 9 man control, quotas will be based on 4-year sales.

Metals and Alloys

Tin Consumption Rises

Estimated world tin consumption for the 1st 10 months of '33 amounted to 108,655 tons, compared with 83,080 tons for the corresponding period of '32, an increase of 30.8%, according to figures released Jan. 2 by The Hague statistical office of the International Tin Research and Development Council. U. S. used 52,251 tons during the 10 months period, compared with 29,397 tons for the 1st 10 months of '32, thus accounting for 89.6% of the increase in world consumption. Apparent U. S. consumption continued to rise in October, that month's total of 6,168 tons representing an increase of 11.1% over September.

World consumption in October, however, dropped off slightly, being estimated at 11,500 tons against 11,924 tons in September. The October consumption was 3,678 tons greater than for October '32. Lower consumption in France and Germany contributed to the decline.

Figures for the 11 months were reported by the United Kingdom, showing 18,299 tons consumed against 17,123 tons for the corresponding period of '32, an increase of 6.9%. November consumption amounted to 1,963 tons against 1,643 tons a year ago.

U. S. tin consumption increased 48% (16,900 tons) for year ended Aug., '33 compared with previous corresponding period and accounted for most of the world increase. Total world consumption for the period totaled 118,000 tons, a U. S. increase of 18,000.

Jap Magnesium?

If plans of the Japan-Manchukuo Magnesium Manufacturing Co. are realized, Japan will soon be self-supplying in magnesium. Projects are now under consideration to expand manufacturing capacity in several plants.

Ask for Corrective Duties

NRA has received requests for corrective import duties on mercury from National Quicksilver Association, and on antimony from China by the Texas Mining & Smelting.

New Silver Alloy

Patent has been granted to Tadashi Tanabe, of Japan, for a silver alloy that is stainless and non-corrosive. Tests show that ornamental articles made of this alloy will not tarnish nor change in appearance. Tests are said to be equivalent to 100 years of actual experiment on this metal, and the results in every case were satisfactory. Stainless silver alloy consists of 0.5-20% of zinc, 10.0-40.0% of tin and 50.0-89.5% of silver.

Copper Development Association has been incorporated at London to find more copper uses.

Merck is now using the new Lev-alift can for its "Di-chloricide."

Important Wax Price Changes

	Dec. 31	Nov. 30
ADVANCED		
Candelilla	$0.10¾	$0.09½
Montan	.10	.09
DECLINED		
Japan	$0.06¼	$0.07
Spermaceti, blocks	.18	.19
cakes	.19	.20

Production, Shipments, Stocks of the Metals

	December 1932	*November 1933*	*November 1932*	*October 1933*	*October 1932*	*September 1933*	*September 1932*
Copper production, U. S.	.....	29,000	.....	33,500	.....	33,000	.....
Foreign	.....	67,000	.....	63,500	.....	62,500	.....
World total	.....	.....	.....	97,000	.....	95,500	.....
Copper deliveries, U. S.	.....	22,000	.....	36,500	.....	37,500	.....
Foreign	.....	69,000	.....	58,000	.....	67,000	.....
World total	.....	.....	.....	94,500	.....	104,500	.....
Copper World stocks	.....	639,500	.....	633,000	.....	638,500	.....
Lead production, U. S.	.....	43,863	.....	41,803	.....	28,430	.....
World total	.....	132,149	.....	123,562	108,808	118,104	.....
Lead stocks as month closed	.....	187,843	175,532	174,721	.....	.....	.....
Lead dom. shipments	.....	30,681	23,065	33,314	.....	.....	.....
Zinc production, U. S.	18,653	32,900	16,078	35,195	15,217	33,319	13,260
World total	.....	102,349	.....	107,108	.....	.....	.....
U. S. ship. slab zinc	15,745	27,033	15,970	38,277	15,970	35,347	19,152
U. S. zinc unfilled orders	8,478	20,633	8,640	23,360	10,333	27,761	16,028
Zinc stocks, U. S.	124,856	101,004	121,948	95,137	121,840	98,219	125,775
Zinc stocks, cartel	.....	141,919	.....	144,192	.....	.....	.....
U. S. retorts oper. end of period	21,023	28,142	19,753	26,820	17,369	25,416	14,915
Silver production, U. S.*	.....	.....	.....	1,781	1,918	1,918	.....
Tin ship. from cartel countries	.....	.....	.....	6,178†	.....	4,492	.....
World tin visible supply	.....	26,075	47,471	27,940	.....	.....	.....

*Oz., 000 omitted; †long tons.

Weekly Price Statistics of the Metals

Week Ending	*Lead, Weekly High-Low* E. St. Louis	N. Y.	London per ton	*Zinc, Weekly High-Low* E. St. Louis	N. Y.	London per ton	*Copper Weekly High-Low* Conn. Valley	*Tin, Weekly High-Low* —Straits—	—Standard—	*Silver Bullion, Weekly High-Low* N. Y.	London (pense)
Close Nov. 29	.0400	.0415	£11 11s 3d	.0450	.0485	£14 15s	8¼c	53.25c	52.75	43⅜c	18⅝
Dec. 1	.0390	.0405	£11 11s 3d £11 8s 9d	.0450	.0485	£14 16s 3d £14 12s 6d	8¼	53.50 –52.25	52.75 –51.75	43¾–42	18⅞–18⅝
Dec. 8	.0400–.0390	.0415–.0405	£11 11s 3d £11 8s 9d	.0450	.0487–.0485	£14 17s 6d £14 12s 6d	8	53.375–52.50	52.875–52.00	43⅝–43¼	18⅝–18⅝
Dec. 15	.0400–.0390	.0415–.0405	£11 12s 6d £11 8s 9d	.0450	.0487–.0485	£14 17s 6d £14 12s 6d	8	53.125–52.35	52.50 –51.85	43⅞–42½	18⅝–18½
Dec. 22	.0400–.0390	.0415–.0405	£11 10s £11 5s	.0450–.0445	.0487–.0480	£15 2s 6d £14 15s	8¼–8⅜	53.35 –52.35	52.85 –51.95	44¼–43	19⅛–18⅝
Dec. 29	.0400	.0415	£11 5s £11 2s 6d	.0445–.0435	.0482–.0470	£14 17s 6d £14 15s	8¼–8⅜	53.30 –52.50	52.85 –52.40	44⅜–45½	19⅛–18⅝
Close Dec. 30	.0400	.0415	Holiday	.0435	.0470	Holiday	8¼	52⅝	52.20	44⅝	Holiday
1933 High		.0450–		.05–	.0535		.09	.5575–	.5555–		
Low		.03		.0260	.0295		.05	.2175	.2110		

Zinc dust prices—there is a differential of $.02 per lb., for carlots above St. Louis zinc market; 5 tons to carload, $.0275, less than j tons $0.325.
Closing prices of other metals: antimony, 7c; 1933 high, .07½; 1933 low, .05½; mercury, $66.50; high $68.00; low $51.00.

Oils and Fats

A Month of Routine Trading

Trading in refined cottonseed futures was largely of a routine nature in the last 2 weeks of the month and year. Switching from near to distant months was of very modest proportions. Price changes were in all cases moderate. Market was influenced, of course, by the fairly steady conditions on the securities and other commodity markets. Markets in the south were also quiet and trading was light. Offerings were generally small.

Trading in the Southern meal and cake markets was along routine lines. Quotations on 7% meal in the Southeast closed the year at $20.50-$21. In the Valley 41% meal was quoted at $19.50 per ton.

Chicago hog market was featured by a show of strength largely on the report that the severe winter weather was retarding shipments. Processing tax on live hogs was held at $1 per 100 lbs. instead of going to $1.50 as it was supposed to to do at the close of the year.

World Cotton Figures

World cotton crop is tentatively estimated by the Bureau of Agricultural Economics, U. S. Dept. of Agriculture, at 25,500,000 bales as compared with 23,600,000 bales last year. This year's estimate is 1,900,000 bales higher than last year's but 2,000,000 bales less than estimated world production in 1931-32, and less than the average of the last 5 years. An announcement issued Dec. 29 by the Dept. of Agriculture further said:

Increase in this year's crop was almost entirely outside U. S., production for foreign countries being estimated at 12,323,000 bales compared with 10,598,000 bales last year. Largest increase abroad was in Egypt, for which the estimate is 1,819,000 bales compared with 1,028,000 bales last year—increase being attributed to both larger acreage and higher yields. Bureau reports that the apparent supply of American cotton remaining in the U. S. on Dec. 1 was approximately 15,900,000 bales, whereas the apparent supply on Dec. 1 last year was 17,250,000 bales. The reduction is attributed to smaller carryover at the beginning of the season and to larger disappearance—consumption plus exports—during the 1st 4 months of the season.

A.A.A. Hearing

Opposition to an amendment, offered by the cottonseed oil industry to its marketing agreement, which would either ban or seriously restrict domestic use of imported oils and fats, was registered by importers and distributors of the latter products on Dec. 20 at a hearing before the A. A. A.

Hearing was the 2nd day's hearing on the cottonseed oil code and marketing agreement.

Earlier, members of the A. A. A. offered an amendment to the proposed substitute code to provide a definite differential between prices of refined cottonseed oil and lard and crude and refined cottonseed oil; bind the industry to purchase definite amounts of seed, and allow the Secretary of Agriculture to set prices on packaged goods.

T. O. Asbury, member of the industry's code committee, sought to amend marketing agreement to provide that the industry would not use fats and oils other than those produced in the continental U. S. It would also restrict or control use of such fats and oils outside the industry so that the cottonseed oil trade would not suffer from competitive disadvantages.

Oil Prices Sag

A number of the more important oils bogged down badly in price in December and the tendency of the entire market was downward. In several instances new lows for '33 were made in the last 10 days of the month. Inquiries were of very limited proportions and purchasing was largely for small immediate replacements. Buyers appeared to be less keen to enter the new year with large inventories than they were early in December. Offerings were light, however, and this fact added some support to the market. Chinawood spurted following the President's silver pronouncement, but buyers did not seem to be willing to follow the market upward. General

Trend of the Cottonseed Oil Markets

(N. Y. Produce Exchange, cents per lb. tanks)

Bleachable Prime Summer Yellow (cents)

Futures	*Close Nov. 29**	*Dec. 1**	*Dec. 8**	*Dec. 15**	*Dec. 22**	*Dec. 29*†*
Jan.	4.38—4.42	4.36—4.44	4.35—4.40	4.33—4.37	4.25—4.40	4.40—4.53
Feb.	4.40—4.60	4.40—4.60	4.38—4.55	4.35—4.50	4.25—4.45	4.40—4.65
March	4.60—4.68	4.64	4.61—4.65	4.56—4.58	4.49—4.55	4.62—4.65
April	4.65—4.85	4.65—4.85	4.65—4.85	4.60—4.75	4.50—4.70	4.65—4.82
May	3.83—4.86	4.84—4.88	4.78—4.83	4.74—4.78	4.69—4.70	4.78—4.83
June	4.85—5.05	4.85—5.05	4.80—5.00	4.75—4.90	4.70—4.90	4.80—5.00
July	4.95—5.05	4.99—5.05	4.97—5.00	4.95—4.97	4.89—4.94	4.98—5.00
Dec.	4.26—4.35	4.26—4.40	4.29—4.40	4.30	4.15	5.00—5.15
Total sales contracts for wk.		397 (298 Switches)	136 (44 Switches)	221 (142 Switches)	180 (78 Switches)	73 (20 Switches)
Spot prime summer yellow		Nominal	Nominal	Nominal	Nominal	Nominal
Crude, southeast		3.50c	3.37½—3.50c	3.37½—3.50c	3.37½—3.50c	3.37½—3.50c
Valley		3.50c	3.37½—3.50c	3.37½—3.50c	3.37½—3.50c	3.37½—3.50c
Texas		3.25c	3.25c	3.12½—3.25c	3.25 —3.37½	3.12½—3.25c

*Closing price on Fridays of the month; †Last trading session of the year.

Memphis Cottonseed Meal Market

Futures	*Dec. 1**	*Dec. 8**	*Dec. 15*	*Dec. 22**	*Dec. 29*†*
Dec.	18.75—19.25	18.75—19.00	19.15—50	19.45—70	20.50f
Jan.	19.25—50	19.23—45	19.85f	19.50f	20.90—21.30
Feb.	19.65—20.00	19.85—20.00	20.25—40	19.85—20.00	21.55—75
March	20.15—65	20.50f	21.00f	20.50—70	22.00—45
April	20.65—21.10	20.85—21.10	21.25—50	21.00—15	22.80f
May	21.25—50	21.40—60	21.75—22.00	21.50—80	23.00—45
June	21.75—22.00	21.85—22.00	22.25—35	21.90—22.50	23.50—95
July	22.00—50	22.25—60	22.75—23.00	22.40—23.00	23.75—24.45
Sales Contracts	6,000	4,600	9,500	5,100	5,700

*Close Friday of each week; fFlat; †Last trading day of the year.

New Orleans (Prime Summer Yellow)

Futures	*Dec. 1**	*Dec. 8**	*Dec. 15**	*Dec. 22**	*Dec. 29†*
Dec.	3.88—97	4.00—09	3.95b		
Jan.	3.93—4.00	4.07f	3.98—4.08	4.01—08	4.17—27
March	4.20—28	4.25—31	4.20—28	4.15—20	4.30—36
April	4.25—35	4.31—40	4.29—38	4.20—29	4.35—50
May	4.37—44	4.40—50	4.40—47	4.30—40	4.47—55
July	4.52—58	4.55—63	4.53—60	4.47—55	4.56—62
Sept.					4.70—79

*Close Friday of each week; fFlat; bBid; †Last trading day of the year.

Chicago Lard Market

Futures	*Dec. 1*	*Dec. 8*	*Week Ending High—Low Dec. 15*	*Dec. 22*	*Dec. 29*	*Close Dec. 30*
Cash	$5.05—$4.65	$5.05—$4.75	$5.05—$4.47	$4.80—$4.45	$4.85—$4.52	$4.85
Dec.	$5.57—$3.90	(Jan.) $5.02—$4.85	$5.10—$4.70	$4.65—$4.40	$4.92—$4.50	$4.85
May	$5.72—$5.20	$5.37—$5.20	$5.47—$5.02	$5.05—$4.80	$5.62—$4.97	$5.25

Cottonseed Products Prices

	Atlanta						*Hull (Eng.)*		*Chicago*		
Week Ending	*Prime Crude oil*	*7% Meal**	*Hulls Loose*	*Linters Clean 1st cut*	*Linters Clean Mill*	*Linters Clean 2nd cut*	*Refined Weekly High—Low†*	*Egyptian crude Weekly High—Low*	*Prime crude oil*	*Yellow oil del. Chgo.*	*Edible Carlots*
Dec. 1	3¾c	$21	$10	3¼c	2½c	2¼c	17s 3d—16s 9d	14s 9d—14s 3d	3⅛—3½c	4½c	5½—6c
Dec. 8	3⅜	21	10	2¼—3¼	2½—3	2¼—2½	17s 3d—16s 6d	15s—14s 3d	3⅛—3½	4½	5½—6
Dec. 15	3⅜	21	10	3¼—3⅜	2½—3	2¼—2½	17s—16s 3d	14s 9d—14s	3⅛—3½	4¾	5 —5½
Dec. 22	3⅜	21	10	3¼—3¾	2½—3	2¼	16s 6d—16s	14s—13s 6d	3 —3½	3⅞	4¾—5
Dec. 29	3¼	21	10	3½—3¾	2½—3	2¼—2½	16s—15s 9d	13s 6d—13s 3d	3 —3½	4¼	4¾—5

*Interior mill points; †per cwt.

Price Comparison, Principal Vegetable, Animal and Fish Oils

Oil	San Francisco Nov. 27	San Francisco Dec. 26	Chicago Dec. 1	Chicago Dec. 29	Baltimore Dec. 1	Baltimore Dec. 29	N. Y. Dec. 1	N. Y. Dec. 29
Vegetable Oils:								
Coconut, crude	2¾c*	2½c*	2⅞c*	2½c*			2⅞c*	2½*
Chinawood	7*	6⅞*	7 9/10 del.	7⅛ del.			7 5/10 del.	7¼ del.
Corn, crude			4 del.	3⅝ del.			4°	3½°
Peanut, crude	5‡	7‡	4c	4¼c			3⅞c	3½c
Perilla	7⅛*	7⅛*		7½*			7½*	7½*
Soybean, dom.	7 del.	7½ del.	6½°	5½°			6½°	6 1/10°
Soybean, crude Oriental	3⅝	3½†						
Fish Oils:								
Menhaden, light priced			5¼—5¾	5½—6	Crude 17-gal.	Crude 15-gal.	n 5 3/10	5 3/10
Sardine	n16‡	12‡	16-18 del.	17-18 del.			16	17-18 del.
Salmon	n17‡	15‡	17-19 del.	16-18 del.			n17	16-18 del.
Whale								
Herring	n17‡	15‡	n	17 del.			n17	17 del.
Animal Oils:								
Degras, com. dom.			3—3¼	3¼—4				
com. neut.			7 —7¼	9¼—9¾				
Lard No. 1			6¾—7¼	6¾—7¼				
No. 2			6¼—6¾	6¼—6¾				
Extra			7¼—7½	7½—7¾				
Oleo No. 1			6 —6¼	5½—6				
No. 2			5½—6	4¾—5¼				
Tallow, acidless			6½—6¾	6½—6¾				

*f.o.b. tank cars, Pacific Coast Ports; †c.i.f. Pacific Coast Ports, bulk, steamers tanks; ‡f.o.b. tank cars, Pacific mills; °f.o.b. Midwest mills; n nominal.

concensus of opinion was that it was more desirable to await developments at the turn of the year before making commitments.

Fish oils on the Pacific Coast were much lower. After maintaining the market nominally for sardine at 16c several sales were reported at 12c and these apparently fixed the market at the lower figure. Salmon was quoted at 15c nominally as the month and year closed. It is reported that November production of sardine oil reached a record for all time. Menhaden trading in the Baltimore area was largely at a standstill during most of the month. Buyers were said to be offering bids as low as 12-13c, while sellers were inclined to hold for even better than 15c.

Prime tallow, the raw material used most extensively by soap makers, was quoted around 3¼c a lb. at Chicago as compared with the year's high of 4½c, reached in June, the year's low of 2½c, touched in March, and the '32 year-end price of 2¾c. While the tallow market was easy throughout most of December, it firmed up recently on heavy purchases by one of the largest soap producers, which is reported to have made the largest single daily purchase on record.

Cocoanut oil currently was quoted at a record low of 2½c a lb. f. o. b., the Pacific Coast as compared with the '32 year-end price of 2⅞c a lb. Weakness in this commodity, according to the trade, is due to its reduced use as an edible because of the lower prices of other fats. Palm oil is slightly stronger, although trading is light because of foreign exchange gyrations. Palm oil was quoted at 3c c. i. f. N. Y., which compares with the '32 year-end price of 2⅝c.

Textile Chemicals

Industry's Loss

Dr. Elvin H. Killheffer, has temporarily retired. On Dec. 1, he was granted an indefinite leave of absence by Du Pont.

Dr. Killheffer graduating from Philadelphia Textile School entered employ of Kalle & Co. and at the outbreak of the World War was their chief application chemist. Realizing that a dyestuff famine impended and that great stocks of dyes were available in the Far East he organized the Orient Trading Co. for the purchase of dyes in China and Japan and their sale in America. Upon his return to this country, Dr. Killheffer used a portion of his profits in establishing American Color Manufacturing at Passaic, N. J., where, under his direction, a number of valuable dyestuffs were produced for the 1st time in America.

In 1918 Dr. Killheffer negotiated an arrangement with the Newport Co. whereby they acquired American Color Manufacturing and a new corporation, Newport Chemical Works, of which he became vice-president, was organized to handle the sale of all Newport dyestuff products. He continued to direct the destinies of Newport, of which he later became president, until its sale to du Pont in 1931.

Dr. Killheffer is a charter member of the A. A. T. C. & C. and has always been most active in its councils. Upon the retirement of Dr. Louis A. Olney in 1927 from the chair which he had occupied continuously since the organization of the Association Dr. Killheffer was elected to the presidency of the Association, was reelected in '28 and '29.

Dr. Killheffer has been an active officer of S. O. C. M. A. almost continuously since its organization. He has been a member of its board of governors, its 1st vice-president and continuously chairman of its tariff committee. He took a leading part in conducting the case of the dyestuff manufacturers before the Ways and Means Committee of the House and the Finance Committee on several occasions.

At the recent S. O. C. M. A. annual meeting Dr. Killheffer was elected an honorary member. He plans to divide his time between his Florida home at Stuart and his summer place at Great Barrington, Mass.

Well Attended

Textile technicians just about taxed capacity of N. Y. City Chemists' Club facilities at annual meeting of the A. A. T. C. & C. held Dec. 8. Du Pont's Dr. Robert E. Rose was reelected president; National Aniline's Alex. Morrison was reelected vice-president; and A. R. Thompson was also elected a vice-president; National Aniline's Moorehouse was elected treasurer; and Harold C. Chapin, Lowell Textile, was elected secretary. Prin-

Quarterly Rayon Statistics (tons)

Country	Estimated world production revised July-Sept.	Apr.-June	Jan.-Mar.	Production by Process Countries (July-Sept.) Viscose	Acetate	Cupra	Collodion	Total	Exports July-Sept.	Apr.-June	July Sept. '32	Imports July-Sept.	Apr.-June	July Sept. '32
Belgium	1,070	1,055	1,045	1,000	70	...	...	1,070	472	680	469	330	240	150
Gt. Britain	10,400	8,640	8,180	7,770	2,380	250	...	10,400	787	698	608	231	189	249
Canada	930	895	820	750	180	...	...	930	...	...	...	...	...	...
Czech	580	580	620	580	...	...	...	580	...	...	...	...	...	...
France	6,480	5,900	5,750	5,980	500	...	...	6,480	1,960	2,063	1,332	135	45	45
Germany	9,350	8,940	8,150	7,900	350	1,100	...	9,350	1,777	2,017	1,872	2,815	2,841	2,118
Holland	2,700	2,650	2,570	15	...	...	...	15	1,477	2,130	1,515	250	213	124
Italy	8,765	9,075	9,035	8,355	210	200	...	8,765	3,450	3,615	2,827	280	250	298
Japan	11,145	9,870	8,570	10,925	...	220	...	11,145	1,595	769	764	32	33	11
Poland	730	380	790	730	...	...	...	730	...	...	...	...	...	...
Spain	550	570	620	550	...	...	...	550	...	...	...	...	...	...
Switz.	1,550	1,345	1,315	1,420	30	...	...	1,450	1,248	1,098	675	690	602	447
U. S.	21,680	15,370	16,740	17,210	3,070	720	680	21,680	120	139	62	480	20	35
Others	305	300	310	130	...	...	...	130	...	...	...	...	...	...
Total	76,135	65,570	64,515	66,140	6,825	2,490	680	76,135	12,886	13,209	10,124	5,243	4,433	3,477
									Diff. (exports less imports)			7,643	8,776	6,647
									App. European surplus exp.			6,440	7,921	5,867

cipal speaker was Paolino Gerli, vice-president, E. Gerli & Co., who spoke on the newly formed International Silk Guild.

New Section

Organization of a Chattanooga chemists' group was effected at a meeting of the South Central Section of the A.A.T.C. & C. Dr. J. W. Edwards was named chairman, and Dr. I. W. Grote, secretary.

In The Rayon Field

Industrial Rayon is to build $410,000 sewer at Cleveland to carry waste to Lake Erie. Dividend action was postponed Dec. 7 because of the lapse of the 5% excise tax on corporate dividends scheduled to take place after Jan. 1. Du Pont Rayon's Helen McGrath (acele division) wrote on "The Yarn of Better Fashions" in current different issue of Du Pont Magazine. Tubize has purchased machinery and equipment of Janome Rayon, Brooklyn, and will move them to Hopewell. DuPont Rayon is rushing construction work at Waynesboro.

Personal and Personnel

United Piece Dye Work's president, Theodore Boettgeer, has been appointed a member of the NRA Regional Labor Board for Newark.

William Flanagan is in charge of dyeing at Hudson River Woolen Mills, Newburgh, N. Y. George H. Rhodes is research chemist at American Printing Co., Fall River. Frank P. Creighton, is overseer of dyeing at Hillcroft Woolen, Wales, Mass. Herbert A. Weller is vice-president, Strengs Dye, Paterson.

G. K. Heller, 217 N. Calvert st., Baltimore, Md. has been appointed sales representative for Glyco Products, Bush Terminal Bldg., No. 5, Brooklyn.

Robert E. Buck, 52, Southern manager for Arnold Hoffman, died Dec. 10 at his home in Charlotte, N. C.

Spring Colors

Colors of the Orient and tropic tints are special fashion features of the Spring color card for silks, according to the Textile Color Card Association. Oriental hues are 12 in number, comprising brilliant tones, as well as several softer blues, suggestive of Chinese pottery. Tropic tints stress pastel and off-white tones for resort, cruise and Summer wear. Reflecting smart Mexican motif are Rio rust and Mexicana, pottery tones typical of that country. Card features new method of presenting colors, each large-size swatch being attached to a removable tab. Nine new shades classified under the basic fashion captions, "Grey Tones," "Beige Tones" and "Sun Tones," are presented in the 1934 Spring Hosiery Card just released by the association to its members.

Not Over Yet!

British Celanese, has filed formal notice of appeal to House of Lords in its suit against Courtaulds, which charged patent infringement; dismissal of suit in lower tribunal was upheld by Court of Appeals.

Important Price Changes

	Dec. 31	Nov. 30
ADVANCED		
Corn syrup, 42°	$3.04	$2.84
43°	3.09	2.89
Divi-Divi	36.00	34.00
Mangrove bark	30.00	29.50
Sumac, Sicilian, ground	70.00	67.50
Valonia beards	40.00	39.50
DECLINED		
Myrobalans, J2	$18.50	$21.00
R2	18.00	21.00

Chemical Specialties

Insecticide & Disinfectant group, meeting at the Hotel New Yorker last month, approved plan of moving secretary's office to N. Y. City, and decided to elect a secretary with an assistant. Baird & McGuire's Harry W. Cole, after a number of years of service as secretary, has retired and the annual dinner of the association became largely a testimonial to him.

With the current meeting Mr. Cole rounded out 20 years of service to the association. From '18 to '21, he was president of the Association, and from '22, to date its secretary. For 18 years, he has been an active member of the Board of Governors. He entered the disinfectant and insecticide business in 1903 as vice-president of The Kretol Co. In '13, he became associated with the Barrett Manufacturing Company (now Barrett Co.) in charge of disinfectant sales. He continued with Barrett until '22 when he joined Baird & McGuire. Filling the secretaryship in 1922 as secretary pro tem in an emergency, his interest, activity, and deep knowledge of the business and the Association won him unanimous reelection every year thereafter. He is a recognized authority on the industry and its products, and is widely known throughout the entire disinfectant and insecticide fields.

Business sessions of the meeting were largely given over to discussion of the Tugwell Bill and the formulating of plans to oppose the objectionable features.

Lye Code Hearing

Lye code hearing on Dec. 7 brought out sharp disagreement between producers whose main activity is solely lye and those with whom the business is merely a small part of other activities. Penn Salt secretary, L. A. Smith, presented an amendment which would permit any producer who had fewer than 15% of his employees engaged solely in the production of lye to elect to be governed by labor provisions of code controlling such manufacturers' major production. Objection was voiced by H. R. Drackett, who stated that if provisions of the lye code did not control production of the entire industry, the way would be open for price-cutting and other unfair trade practices.

October Superphosphate Production‡

PRODUCTION AND RECEIPTS

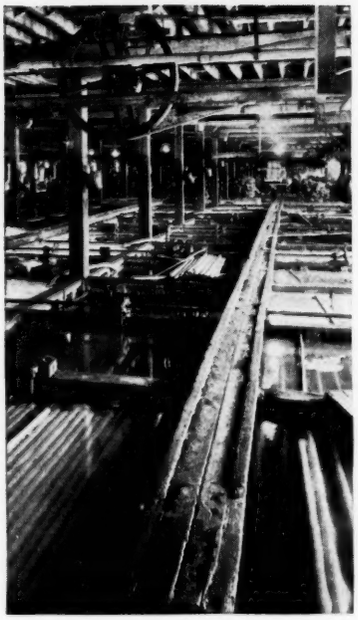
	October 1933	*September 1933*	*October 1932*	*January-October 1933*	*January-October 1932*	*January-October 1931*
	Short tons					
Production—						
Buk superphosphates—						
Totals, United States	317,470	240,243	150,018	2,034,793	1,330,915	2,334,439
Northern district	149,456	103,836	71,857	1,104,938	838,184	1,381,434
Southern district	168,014	136,407	78,161	929,855	492,731	953,005
Base and mixed goods—						
Totals, United States	9,569	7,191	7,376	79,674	68,810	*
Northern district	6,433	4,797	1,839	46,853	30,308	*
Southern district	3,136	2,394	5,537	32,821	38,502	*
Received from other acidulators (including inter-company transfers)†						
Totals, United States	27,297	22,651	13,061	221,282	141,747	*
Northern district	15,395	9,971	6,537	131,508	101,510	*
Southern district	11,902	12,680	6,524	89,774	40,237	*
SHIPMENTS						
Bulk superphosphates—						
Totals, United States	141,136	174,245	108,734	1,592,522	1,412,838	*
Northern district	94,184	144,169	70,247	929,736	822,764	*
Southern district	46,952	30,076	38,487	662,786	590,074	*
To mixers—						
Totals, United States	52,201	66,548	48,172	652,815	591,875	*
Northern district	40,615	61,332	34,801	464,094	372,130	*
Southern district	11,586	5,216	13,371	188,721	219,745	*
To other acidulators (including inter-company transfers)—						
Totals, United States	15,015	13,280	13,224	154,091	132,994	*
Northern district	7,035	4,533	4,663	94,023	92,420	*
Southern district	7,980	8,747	8,561	60,068	40,574	*
To consumers—						
Totals, United States	73,920	94,417	47,338	785,616	687,969	1,005,375
Northern district	46,534	78,304	30,783	371,619	358,214	532,466
Southern district	27,386	16,113	16,555	413,997	329,755	472,909
Base and mixed goods—						
Totals, United States	69,661	110,203	42,886	1,074,719	834,867	*
Northern district	35,997	95,831	24,845	494,016	476,186	*
Southern district	33,664	14,372	18,041	580,703	358,681	*
STOCKS						
Bulk superphosphates—						
Totals, United States	859,449	735,552	874,042	.....	.....	.....
Northern district	344,637	303,838	368,710	.....	.....	.....
Southern district	514,812	431,714	505,332	.....	.....	.....
Base and mixed goods—						
Totals, United States	219,694	206,702	240,358	.....	.....	.....
Northern district	107,686	114,079	94,376	.....	.....	.....
Southern district	112,008	92,623	145,982	.....	.....	.....

*Data not available. †Includes both bulk superphosphates and base and mixed goods. ‡71 manufacturers.

TANNERS!

For POSITIVE CONTROL of the Acidity of Your Yard Liquors

GRASSELLI LACTIC ACID



During the colder weather, when fermentation is retarded in your yard liquors, maintenance of the proper pH is difficult.

It is at this point that Grasselli LACTIC ACID should be considered.

Lactic, added in definite quantities, because of its natural origin and known strength, will maintain the desired acidity without retarding natural fermentation or interfering with the normal process of tanning.

If you have a problem involving this important factor, we would be very happy to cooperate toward a solution.

GRASSELLI

For many years Grasselli has specialized in the manufacture of high-grade tanners' chemicals.

- Acetic Acid
- Alum
- Barium Chloride
- Bi-Chromate of Soda
- Formic Acid
- Glauber's Salt
- Hypo-Sulphite of Soda
- Muriatic Acid
- Sulphide of Soda
- Sulphite of Soda
- Sulphuric Acid
- Tri-Sodium Phosphate

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GRASSELLI GRADE
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Fertilizers

Nitrate Prices Higher

On Jan. 2 nitrate prices were advanced. Such action was anticipated. Bulk is quoted at $24.50; 200 lb. bags at $26.30; and 100 lb. bags at $27.00. Contrary to general expectations sulfate prices were renewed for Jan.-June period at the $25 level for bulk material and the usual differential for packing. In a number of quarters a $1 advance in addition to the November advance of $1 was looked for. No change was made in the cyanamid quotation.

As the new year came in phosphate rock prices were automatically advanced 5c as follows:—Land pebble, 68% minimum, Jan.-June delivery, $2.85 per ton; July-Sept. delivery, $3.10 per ton; Oct.-Dec. delivery, $3.15 per ton; Jan. 1935-June, 1935, $3.20 per ton. Schedule for 70% rock is 50c higher than 62% grade, and 72% rock is $1 per ton higher. The 75% grade, minimum 74%, is based at $4.90 per ton for Jan.-June delivery; July-Sept., $5.15 per ton; Oct.-Dec., $5.25 per ton; and Jan., 1935-June, 1935, $5.30 per ton. The 75% minimum grade is priced at 10c per ton higher than the 74% minimum; price of 77%, minimum 76%, is 90c per ton higher than the 74% minimum, and the 77% minimum is $1 per ton higher than the 74% minimum.

Situation in potash continues very uncertain. Domestic producers and the leading importer have made no public announcement as yet of the schedule, now 6 months overdue. Domestic producers took whatever December business existed at the 2½% discount (delivery through Jan.-Feb.). Entrance of a new domestic producer into actual production has complicated the situation still further. The entire question is very much "up in the air."

Effective Jan. 1 calcium nitrate price became $26.50. The organic ammoniates were generally weaker. Leaders of the fertilizer industry in end-of-the-year statements were optimistic over '34 tonnage and look for the best financial returns in years.

Magruder Reviewed

Royster Guano's chief chemist, Egbert Watson Magruder, also chairman of the A.C.S. Fertilizer Section, is the subject of *I.E.C.*'s December "American Contemporaries."

New Potash Producer

Potash Co. of America, organized some time ago to exploit deposits in the vicinity of Carlsbad, N. M., has started operations. Selling quarters have been established in Baltimore (Mercantile Trust Bldg.), and C. C. Smith, formerly with N. V. Potash, is vice-president and general sales manager.

*Construction of Shoals phosphoric unit started Jan. 10 and is to be completed July 1.

Important Price Changes

	Dec. 31	Nov. 30
ADVANCED		
Sodium nitrate, 100 lb., bags	$27.00	$25.90
bulk	24.50	23.90
200 lb., bags	26.30	25.20
Tankage, unground, N.Y.	2.35	2.25
DECLINED		
Blood, dried, N. Y.	$2.60	$2.75
Chicago	2.15	2.50
Bone material, 4½ & 50	23.00	24.00
Nitrogenous material, dom. Eastern	2.40	2.45

N. F. A. Protest

N.F.A. has protested against propoganda that Government's Tennessee Valley power project can cut fertilizer prices in half. "Campaign" is characterized as "inappropriate" and misleading and grossly unfair to T.V.A."* It is likely, it is said in some quarters, that the Government will resort to curtailment of cotton production rather than to acreage. It is reported, Washington dispatches state, that officials have been advised that cotton farmers are investing heavily in fertilizer for next season and will go in for intensive cultivation of restricted areas on a scale not heretofore thought of.

Uniform Sales Contracts

Sub-committee on Uniform Contracts of the N.F.A. Fertilizer Recovery Committee (Horace Bowker, chairman) has adopted 5 typical contracts. They must 1st be approved by Recovery Committee and NRA.

Foreign Business

Both imports and exports of fertilizer and fertilizer materials for November were much larger than for November, '32 and were also higher than for November, '31. Imports and exports have, for 6 consecutive months, been higher than for comparable months of last season. November imports were about 49% larger than last November, and about 52% larger than for November, '31. November exports were 74% larger than for November, '32 and about 45% larger than for November, '31.

United States Imports and Exports of Fertilizer and Fertilizer Materials By Classes—Total for All Countries—Long Tons

IMPORTS

	November			August-November		
	1933	*1932*	*1931*	*1933*	*1932*	*1931*
Ammonium sulfate	30,254	25,614	14,947	90,504	106,848	54,649
Ammonium-sulfate-nitrate	0	0	44	0	0	45
Calcium cyanamide	5,337	6,069	1,956	12,790	19,144	10,753
Calcium nitrate	1,801	1,002	1,786	3,855	1,505	1,810
Guano	205	6,572	0	21,136	18,537	294
Dried blood	317	244	327	4,268	654	2,743
Sodium nitrate	13,762	4,887	30,871	52,605	5,417	148,796
Urea and calurea	248	106	1,158	1,541	814	2,278
Ammonium phosphates	1,436	*	*	2,605	*	*
Tankage	1,388	2,630	2,256	8,913	6,155	8,195
Other nitrogenous	5,358	1,503	492	23,429	3,440	4,135
Total nitrogenous materials	60,106	48,627	53,837	221,646	162,514	233,698
Bone phosphates	2,263	3,064	5,170	10,794	8,391	13,392
Superphosphates	4,988	1,749	*	10,605	6,252	*
Phosphate rock	0	0	*	5,625	0	*
All other phosphates	100	45	407	250	7,017	11,549
Total phosphate materials	7,351	4,858	5,577	27,274	21,660	24,941
Muriate of potash	10,945	7,877	8,128	47,883	39,242	84,026
Kainite, 14%	5,726	3,808	403	13,521	13,021	10,770
Kainite, 20%	17,000	‡	‡	34,070	‡	‡
Manure salts, 30%	8,267	9,263	3,196	51,236	44,729	72,097
Sulfate of potash	3,547	3,520	1,105	19,500	14,624	27,080
Sulfate of pot. magnesia	2,270	*	*	9,047	*	*
Nitrate of potash	426	*	*	12,909	*	*
Other potash	4	40	40	118	76	453
Total potash materials	48,685	24,508	12,872	188,284	111,692	194,426
Nit-phos-and pot fertilizers	0	3	483	439	1,961	1,418
Other fertilizers	3,385	2,323	6,080	14,378	19,161	19,487
Grand total	119,527	80,319	78,849	452,021	316,988	473,970

EXPORTS

Ammonium sulfate	3,453	135	253	8,042	758	5,692
Other nitrogenous chemicals†	7,364	12,063	2,205	36,989	77,858	25,454
Nitrogenous organic waste	996	1,635	826	4,303	3,721	826
Total nitrogenous materials	11,813	13,833	3,284	49,334	82,337	31,972
High grade hard rock	11,001	391	14,370	23,387	22,133	69,102
Land pebble rock	84,368	49,908	59,552	334,726	131,110	277,145
Total phosphate rock	95,369	50,299	73,922	358,113	153,243	346,247
Superphosphates	6,052	186	2,636	22,335	8,062	26,136
Other phosphate materials	694	35	60	1,562	132	687
Total phosphate materials	102,115	50,520	76,618	382,010	161,437	373,070
Potash fertilizers	1,968	654	4	8,196	847	356
Concentr'd chem. fertilizers	1,777	2,554	1,563	6,949	7,224	12,049
Prepared fertilizer mixtures	281	65	67	1,771	661	1,665
Grand total	117,954	67,626	81,536	448,260	252,506	419,112

*Not previously stated separately.
‡Included in kainite, 14%.
†Chiefly domestic synthetic sodium nitrate.

HOOKER CAUSTIC SODA

WHEN YOU SPECIFY CAUSTIC SODA, CONSIDER THE ECONOMIES THAT ARE POSSIBLE THROUGH THE CORRECT APPLICATION TO YOUR SPECIFIC REQUIREMENTS.

HOOKER CAUSTIC SODA CARRIES WITH IT THE SERVICES OF THE HOOKER SALES AND TECHNICAL STAFFS—EXPERIENCED IN STUDYING INDIVIDUAL NEEDS AND RECOMMENDING THE RIGHT MATERIALS.

AMPLE STOCKS FROM CONVENIENTLY LOCATED PLANTS INSURE PROMPT DELIVERY TO ALL PARTS OF THE COUNTRY.

FUSED OR SOLID CAUSTIC SODA	—IN STEEL DRUMS
LIQUID CAUSTIC SODA	—IN DRUMS AND TANK CARS
FLAKE CAUSTIC SODA	—IN STEEL DRUMS
GROUND & POWDERED CAUSTIC SODA	—IN STEEL DRUMS OR HEAVY WOODEN BARRELS

HOOKER ELECTROCHEMICAL COMPANY

EASTERN
PLANT—NIAGARA FALLS, N. Y.
SALES OFFICE: 60 E. 42ND ST., NEW YORK

WESTERN
PLANT—TACOMA, WASH.
SALES OFFICE: TACOMA, WASH.

LIQUID CAUSTIC SODA TANK CAR

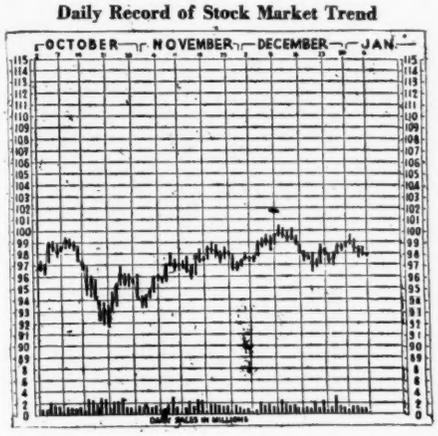
HOOKER CHEMICALS

The Financial Markets

Not a Bad Ending

December stock market trend was decidedly irregular. While the list as a whole registered a slight gain when compared with the November close, a number of groups showed appreciable losses.

Daily Record of Stock Market Trend



N. Y. Herald-Tribune

Volume of trading was somewhat heavier. As measured by the 240 stocks divided into 20 groups, computed by the *N. Y. Times*, values rose $295,784,927, a gain of only 1½%. This compares with $1,744,353,272 or a 10% gain in November and $417,377,318 or 3% in December, '32.

In the last year, $5,147,072,000 was added to the value of the issues used in the compilation, an enhancement of 54%, in contrast with a loss of $2,029,862,554, or 14%, in '32. Market moved higher in 8 months in '33, 4 of them consecutive, making the longest series of monthly gains since '29. In '32, prices moved forward in five months and in '31 in only 4.

Since the end of September, '29, the market has advanced in 21 months and declined in 30. Level of prices is still 62% below that of September, '29, but 130% above the depression low mark made in '32.

*Total value of the complete chemical list of stocks on the exchange on Jan. 1 amounted to $3,615,566,312, compared with $3,469,121,796 on Dec. 1 and $3,116,558,940 on Nov. 1. Average price on Jan. 1 was $50.50, compared with $48.45 on Dec. 1 and $43.52 on Nov. 1.

Group Changes Compared

Following table shows net changes in value in 20 groups. It is interesting to note that the total dollar appreciation in the chemical group was only exceeded by that of the automotive group. Chemical stocks in December, in most instances, were very strong and in wide demand.

Group and Number of Issues	*Avr. Net Ch'ge in Points*	*Change in Values*
Amusements (5)	— .475	— $5,243,236
Building equipment (9)	+1.347	+ 18,261,869
Business equipment (4)	+1.875	+ 9,026,795
Chain stores (14)	+ .098	+ 30,921,493
Chemicals (9)	**+ .833**	**+136,153,982**
Coppers (15)	+ .133	— 18,367,625
Department stores (10)	+ .487	+ 8,564,822
Foods (19)	— .112	— 47,162,235
Leathers (4)	+ .562	+ 904,278
Mail order (3)	+ .958	— 172,219
Motors (15)	+ .975	+185,885,016
Motor equipment (7)	+1.053	+ 10,100,689
Oils (22)	— .557	— 68,928,912
Public utilities (29)	— .526	—125,126,064
Railroads (25)	+2.170	+126,584,699
Railroad equipment (8)	+2.766	+ 36,593,228
Rubber (6)	— .604	— 4,641,044
Steels (13)	+2.702	+ 68,428,505
Sugars (9)	+1.764	— 16,542,726
Tobaccos (14)	—1.643	— 50,456,388
Average and total 240 issues	+ .414	+$294,784,927

Mixed Trend In Chemicals

As in the case of the general list the movement within the chemical group was mixed. Advances outnumbered declines and spectacular gains were made by Allied, du Pont, and Monsanto. Mathieson and U. S. I. suffered sizable net losses for the month. Net changes in the 9 stocks comprising the chemical group were as follows:*

Name	*Appreciation*
Allied Chemical & Dye	$15,008,050
Commercial Solvents	4,616,827
Du Pont de Nemours	105,124,007
Mathieson Alkali Wks	*3,577,398
Texas Gulf Sulphur	*6,032,500
Union Carbide & Carb	23,067,342
U. S. Industrial Alcohol	*2,347,428
Virginia-Carolina Chem	.....
Westvaco Chlorine Prod	295,082
Total	+$136,153,982

Monthly Gains and Losses

Net monthly changes in value of the chemical group (*N. Y. Times*) from January through December have been as follows:

	Increases	*Declines*
January	$39,652,757	.....
February	.....	$168,411,582
March	24,037,138	.....
April	403,188,208	.....
May	385,593,391	.....
June	139,232,100	.....
July	.....	149,136,077
August	331,595,207	.....
September	.....	128,228,866
October	.....	99,349,903
November	255,580,248	.....
December	136,153,982	.....
Total	$1,715,033,031	$536,126,428

Comparing With '32

Net appreciation for this chemical group of stocks during the past year reached the total of $1,178,906,603. Stocks advanced in 8 months and declined in 4 thus following the general market trend. In '32 the year's net loss amounted to $368,177,263; advances being made in 4 months and declines in 8. In 2 months in '32 the chemical group failed to follow the general trend of the market.

Comparison of closing prices for the past year with those prevailing at the close of '32 show to what extent recovery has progressed to date.

	Close '33	*Close '32*	*Net Gain*
Allied Chem. & Dye	148¼	83⅛	+65⅛
Commercial Solvents	31¾	10¼	+21½
DuPont de Nenours	95⅝	37⅜	+58¼
Mathieson Alkali Wks	36	14½	+21½
Texas Gulf Sulphur	40⅛	22½	+17⅝
Union Carbide & Carb	47½	26¼	+21¼
U. S. Industrial Alcohol	53	25¾	+27¼
Virginia-Carolina Chem	3	1	+ 2
Westvaco Chlorine Prods	15⅞	6¼	+ 9⅝

While none of the leading chemical companies have had sufficient time to release final '33 earning statements, there is no question but what such statements generally will show decided improvement over '32. Likewise it is generally accepted that by comparison with other basic industries the chemical field has enjoyed good business. Heaviest tonnages, of course, were experienced in the 3rd and 4th quarters with the former in all probability the greater of the 2. The market is bullish on the industry for '34, feeling that with better prices prevailing and with the strong possibility of larger tonnages net earnings will be much better.

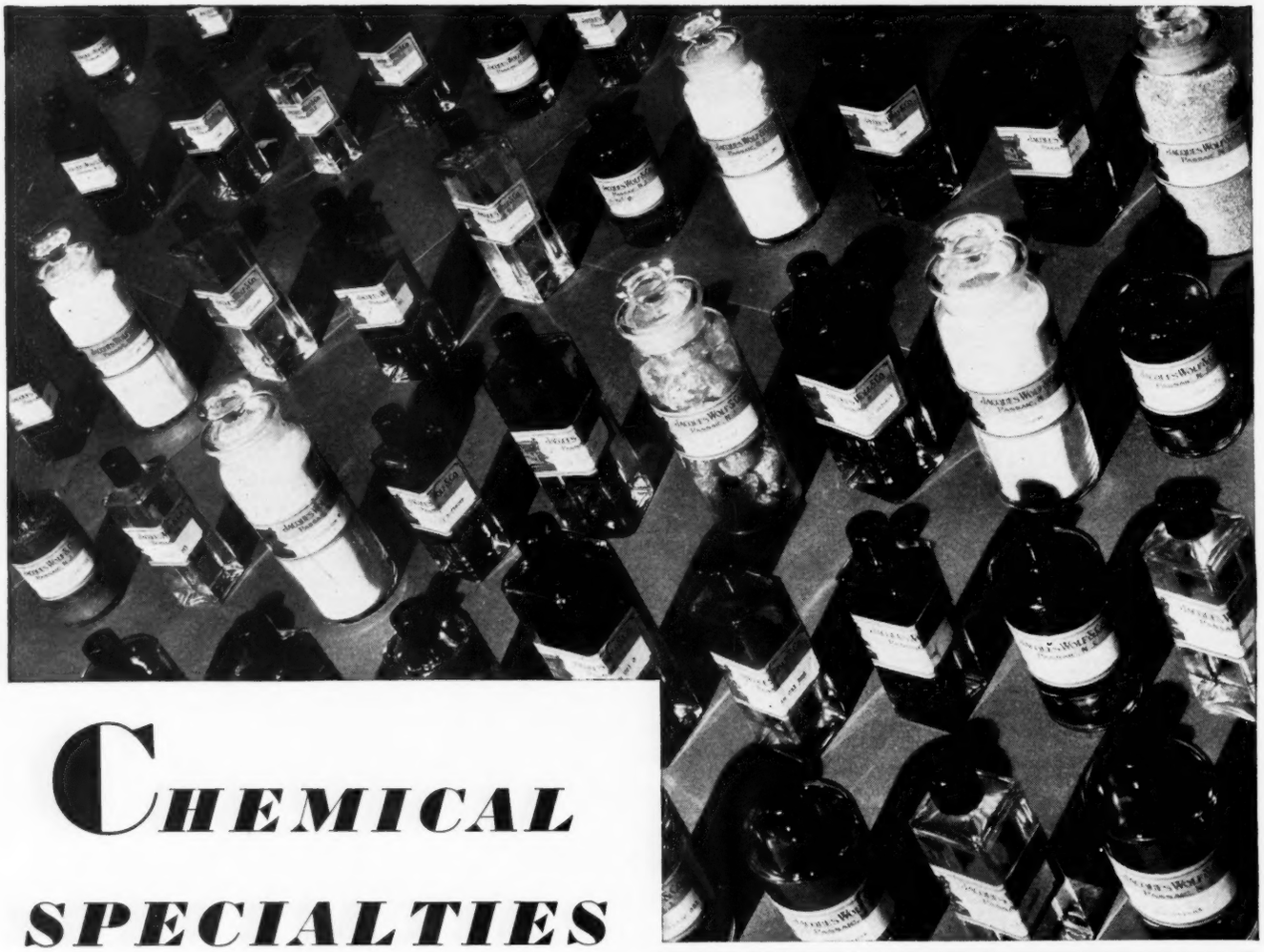
New financing was scarce in the past year, the 2 outstanding new issues being Freeport's 25,000 shares of new 6% convertible preferred at $100 a share (issued in part to finance the new Louisiana mining properties and the very recent announcement of Mathieson Alkali's new stock offering to finance the proposed Lake Charles, La., plant.

Tubize Chatillon stockholders have authorized proposed new $5,000,000 bond issue. They also authorized a mortgage on the company's plants, real estate and equipment to secure this bond issue.

Price Trend of Chemical Company Stocks

	*Close Nov. 29**	*Dec. 2*	*Dec. 9*	*Dec. 16*	*Dec. 23*	*Close Dec. 30†*	*Net Gain or Loss*	*1933 High*	*1933 Low*
Allied Chemical	142	143	146½	147¾	149	148¼	+ 6¼	152	70¾
Air Reduction	101¾	103	100	101	98⅛	99	— 2¾	112	47½
Anaconda	14¾	14½	14⅝	14¼	14⅞	14⅝	— ⅛	22⅞	5
Columbian Carbon	60½	61½	62½	62	60	61½	+ 1	71½	23⅛
Commercial Solvents	30	30⅝	32	32¾	31¾	31¾	+ 1¾	57¼	9
Du Pont	86⅛	88¼	90	90	93¼	95⅝	+ 9½	96⅜	32⅛
Mathieson	41½	41½	39⅛	36	33	36	— 5½	46⅝	14
Monsanto	72	73	76	81⅛	78⅝	82	+10	83	25
Std. N. J.	45⅛	46⅛	46½	46⅜	45⅜	45¾	+ ⅝	47½	22¾
Texas Gulf S.	42½	43⅝	42	41½	41¼	40⅛	— 2⅜	45¼	15¼
U. S. I.	59	60	60	60	51½	53	— 6	94	13½

*Nov. 30, Thanksgiving Day. †Last trading day of year.



CHEMICAL SPECIALTIES

for Every Textile Need

● The Jacques Wolf line of textile chemicals includes chemical specialties for every phase of textile processing — dyeing, bleaching, scouring, finishing, printing, lubricating, delustering, sizing, etc.

In addition to these more staple products our chemists are constantly cooperating with our customers on special problems which in a great many cases actually result in additional new products as well as improvements in the regular line.

Perhaps you have not been aware of the complete facilities we offer. We invite your confidence and welcome the opportunity to work with you.

WOOL
Bensapol
Wool Oils
Shoddy Oils
Wool Finish
Wolfco Scouring Agents
Hydrosulphite Strip

COTTON
Kier Oils
Soluble Wax
Soluble Castor Oil
Wolfco Sizings
Dye Penetrants
Cream Softeners
Stearic Softeners
Sulphonated Oils
Waterproofing Compounds
Soluble Pine Oil

GUMS
Arabic
Tragacanth
Karaya

LUPOGUM
MONOPOLE OIL

RAYON
Penetrators
Knitting Oils
Scouring Oils
Delustre S-342
Rayon Softeners
Sizing Lubricants

SILK
Finishes
Tin Dye Oil
Boil-Off Oils
Boil-Off Bleach
Chafe Remover
Turkey Red Oil
Sulphonated Olive Oil
W-X-W
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Printing, Vat Colors
and Indigo Discharge

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JACQUES WOLF & CO.

Manufacturing Chemists and Importers

Passaic, N. J.

Warehouses: **Providence, R. I. • Philadelphia, Pa. • Utica, N. Y. • Chicago, Ill. • Greenville, S. C. • Chattanooga, Tenn.**

Foreign Markets

London	Oct. 31	Nov. 30	Dec. 30*
British Celanese..	15s 6d	12s 10½d	13s 6d
Celanese	£8⅝	£8⅜	£7
Courtaulds	£2⅛	£2⅛	£2⅛
Distillers	82s 9d	80s 6d	81s 3d
I. C. I.	30s 3d	30s 6d	32s 1½d
Un. Molasses	13s 10¼d	13s	1½d
Paris			
Kuhlmann	650	630	683
L'Air Liquide	760	770	759
Berlin			
I. G. Farben	116	126¼	123
Milan			
Montecatini	119¾	129½	130½

*London prices Dec. 29.

Over the Counter Prices

	Oct. 31		Nov. 29		Dec. 30	
American Hard Rubber	8	12½	7½	11	6	10
Dixon Crucible	37	42½	32	37	34	38
Merck, pfd	101½	105½	101½	105½	104	107
Worcester Salt	47½	53	47¾	53½	...	...
Young, J. S. pfd	82½	...	83	...	83	...
Young, J. S. com	57½	...	57½	...	56	...

Du Pont Retires Stock

Du Pont has notified N. Y. Stock Exchange that it intends to reduce authorized capital stock by retirement of an authorized issue of $10,000,000 of 6% cumulative voting debenture stock. This issue is not listed on the exchange, and of it only $33,550 was outstanding Dec. 31, '32, with $1,705,200 of the issue held in the company's treasury and the balance retired. In addition to the voting debenture stock there was $109,269,900 of non-voting 6% debenture stock, which is listed on the stock exchange and of which $579,600 was held in the company's treasury.

Novel Investment Trust

Supervised Shares, Inc., is a novel form of investment trust. Directors recommend stocks to an "approved list" and these are automatically "eligible" at the end of a 30 day period unless objections are made by holders of 25% of outstanding stock of Supervised Shares. Latest "eligible" chemical additions: Commercial Solvents, Mathieson, Texas Gulf Sulphur, and U. S. I. Says the latest report: "Addition to the approved list does not necessarily mean that their stocks will be added immediately to the portfolio."

Financial Readjustment

Federal Trade Commission on Dec. 13 announced that R. M. Hollingshead Corp. (lubricants, soaps, various chemical specialties) proposed to offer pursuant to a plan of readjustment or reorganization debenture bonds in the amount of $250,000, also $317,500 of 1st preferred stock, $337,050 of 2nd preferred stock, and Classes A and B common stock of $1,000. Reorganization committee: John Nickerson, Jr., N. Y. City; A. B. Green, Cleveland; John A. Packard, 3rd.; and Clarence E. Hall, both of Philadelphia.

Smelting 1st Preferred

American Smelting & Refining has declared quarterly dividend of $2.50 on the 7% 1st preferred stock, payable March 1 to stock of record Feb. 2.

Three months ago American Smelting resumed declarations of dividends of 7% 1st preferred stock on which there is an accumulation of $8 in back dividends. Nothing can be declared on the 6% 2nd preferred stock until this accumulation on the 1st preferred stock has been paid.

Dividends and Dates

Name	Div.	Stock Record	Payable
Abbott Labs.	.50	Dec. 16	Jan. 3
Air Reduction	.75	Dec. 30	Jan. 15
Allied Chem. pfd.	$1.75	Dec. 11	Jan. 2
Alum Co. of Am. pfd.	.37½	Dec. 15	Jan. 1
Amer. Glanzstoff, pf.	.75	Dec. 22	Jan. 1
Amer. Hard Rubber 8% pfd.	$2.00	Dec. 18	Jan. 2
Amer. Home Prods.	.20	Dec. 14	Jan. 2
Amer. Maize Prods., pfd.	$1.75	Dec. 26	Dec. 30
Canad. Indust., pfd.	$1.75	Dec. 30	Jan. 15
Celanese 7% pfd.	$1.75	Dec. 16	Jan. 1
Celanese 7% cum. 1st pfd.	$3.50	Dec. 16	Dec. 31
Champion Fibre 7% pfd.	$1.75	Dec. 20	Jan. 1
Clorox Chemical	.50	Dec. 20	Jan. 1
Colgate-Palmolive, pfd.	$1.50	Dec. 11	Jan. 1
Comm. Solvents	.30	Dec. 1	Dec. 30
Corn Prods, com	.75	Jan. 2	Jan. 20
Corn Prods, pfd.	$1.75	Jan. 2	Jan. 15
Devoe & Reynolds A&B	.25	Dec. 20	Jan. 2
Devoe & Raynolds, extra	.25	Dec. 20	Jan. 2
DuPont, deb.	$1.50	Jan. 10	Jan. 25
Eastman Kodak	.75	Dec. 5	Jan. 2
Eastman Kodak, pfd.	$1.50	Dec. 5	Jan. 2
Freeport Texas, pfd.	$1.50	Jan. 15	Feb. 1
Glidden	.25	Dec. 14	Dec. 30
Glidden, prior, pfd.	$1.75	Dec. 14	Jan. 2
Hazel Atlas Glass	$1.00	Dec. 16	Jan. 2
Hazel Atlas Glass, extra	$1.00	Dec. 16	Jan. 2
Heyden Chem., pfd.	$1.75	Dec. 20	Jan. 2
Hooker Electro, pfd	$1.50	Dec. 21	Dec. 30
Int. Nickel, pfd.	$1.75	Jan. 2	Feb. 1
Indust. Rayon	$1.00	Jan. 10	Jan. 16
Int. Salt	.37½	Dec. 15	Jan. 2
Koppers Gas & Coke, pfd	$1.50	Dec. 12	Jan. 2
Liquid Carbonic	.25	Jan. 20	Feb. 1
Liquid Carbonic, spec.	.25	Jan. 20	Feb. 1
Mathieson Alk.	.37½	Dec. 8	Jan. 2
Mathieson Alk., pfd.	$1.75	Dec. 8	Jan. 2
Merck Corp., pfd.	$2.00	Dec. 16	Jan. 2
Monroe Chem., pfd.	.87½	Dec. 15	Jan. 2
National Lead	$1.25	Dec. 15	Dec. 30
Nat'l Class B, pfd.	$1.50	Jan. 19	Feb. 1
Niagara Alkali, pfd.	$1.75	Dec. 22	Jan. 2
Pittsburgh Plate Glass	.25	Dec. 9	Jan. 2
Pratt & Lambert	.12½	Dec. 15	Jan. 2
Pratt & Lambert, extra	.12½	Dec. 15	Jan. 2
Proctor & Gamble 8% pfd.	$2.00	Dec. 22	Jan. 15
Southern Acid & Sulphur, pfd.	$1.75	Dec. 10	Jan. 3
Spencer Kellogg	.25	Dec. 15	Dec. 30
Union Carbide	.25	Dec. 1	Jan. 1
United Carbon	.40	Dec. 13	Jan. 2
United Dyewood, pfd.	$1.75	Dec. 20	Jan. 2
U. S. Gypsum	.25	Dec. 15	Jan. 2
U. S. Gypsum, pfd.	$1.75	Dec. 15	Jan. 2
U. S. Smelt Refining	.25	Jan. 2	Jan. 15
U. S. Smelt, extra	$3.50	Jan. 2	Jan. 15
U. S. Smelt, pfd.	.87½	Jan. 2	Jan. 15
Westvaco Chlorine, pfd.	$1.75	Dec. 15	Jan. 2
Young, J. S.	$1.50	Dec. 22	Jan. 2
Young, J. S., 7% pfd.	$1.75	Dec. 22	Jan. 2

Annual and Special Meetings

	Record date	Meeting date
du Pont (special)	Feb. 1	March 12
Glidden	Dec. 28	Jan. 18

Rights

	Record date	Settlement date	Priv. Expires
Mathieson, com	Dec. 29	Jan. 9	Jan. 22

Cyanamid Pays Dividend

American Cyanamid declared out of its net earnings for '33 a special dividend of 25c on Class A and Class B stocks payable on Feb. 1, to stock of record Jan. 19. This is the 1st dividend since July 1, '30, when 40c quarterly was paid.

In so doing the board requested that this distribution be regarded simply as a return to the stockholders out of the earnings for '33, and not the establishment of a dividend basis or policy for the future, formulation of which should not, in the opinion of the board, be attempted at this time.

While audited figures for the year '33 will not be forthcoming for about 2 months, it is understood that consolidated net earnings for '33 computed in the usual way, before including certain items of non-recurring income, are estimated to be something over $2,000,000.

For year ended Dec. 31, '32, company reported net profit of $349,725 after depreciation, federal taxes, etc., equal to 14c a share on 2,470,137 combined Class A and Class B shares, exclusive of shares held by subsidiaries.

Booklets Just Received

"The Moisture Permeability of Various Protective Coatings" is discussed in an 8-page pamphlet of Hercules Powder and which contains conclusions reached by the company's experiment stations.

Barrett has issued a 16-page pamphlet "A Book of Facts" and dealing with the subject of the company's product. Arcadian nitrate of soda. Publication was prepared for retail distributors and for fertilizer salesmen giving essential information regarding Arcadian nitrate of soda and also explaining the various kinds of advertising and publicity projects which the company is using to help promote the sale of its product.

Rex Research's former president, F. O. Moburg, is reported buying assets from receiver. Company produced Fly-Tox. Grasselli, late in '32, purchased the agricultural division. Hoy Chemical, St.Louis, has taken over DeSoto Chemical (deodorants and floor waxes).

Rosin-Turpentine Export Figures April-October

Country	Season—Rosin† 1933	1932	1931	1930	Season—Turpentine 1933	1932	1931	1930
United Kingdom	166,988	147,043	148,653	198,115	89,670	79,555	70,366	99,195
Germany	156,592	160,780	142,801	151,025	35,181	17,214	20,736	23,572
Italy	31,768	21,298	21,489	23,100	774	784	723	.....
Netherlands	61,596	57,925	40,853	52,644	36,491	26,259	26,890	28,120
Belgium	19,344	17,088	11,203	17,723	.....	.....	.....	.....
Norway	8,226	7,250	4,050	8,118	.....	.....	.....	.....
Sweden	22,526	17,780	17,072	22,414	.....	.....	.....	.....
South America	100,600	103,767	113,658	162,217	5,669	4,157	8,454	9,581
Japan	47,049	42,927	72,910	59,694	768	438	959	672
Dutch East Indies	43,382	26,556	32,653	34,949	.....	.....	.....	.....
Austria & N. Zealand	18,918	6,704	8,955	8,868	7,481	7,322	8,299	6,745
Canada	36,519	28,638	29,832	34,988	14,851	13,423	14,882	16,877
Cuba	10,927	9,930	11,821	12,038	701	255	338	512
Europe	480,244	433,085	395,587	484,613	171,921	133,249	133,012	173,327
Total outside of Europe	276,609	240,215	290,913	338,085	31,809	28,160	36,557	37,610
Total	756,853	673,300	686,500	822,608	203,750	161,409	169,569	210,937

†In bbls. of 500 lbs., gum and wood rosin; April through October for both rosin and turpentine.

The Industry's Securities

1933 December Last	1933 High	1933 Low	1932 High	1932 Low	Sales In December	Sales During 1933	Stocks	Par $	Shares Listed	An. Rate		Earnings $-per share-$ 1931	Earnings $-per share-$ 1930
NEW YORK STOCK EXCHANGE													
99	104⅞	97⅛	112	47½	63½	30⅛	30,000	688,100	Air Reduction	No	841,288	$3.00		4.54	6.32
148¾	132†	140½	152	70¾	88¼	42½	70,300	2,471,800	Allied Chem. & Dye	No	2,401,000	6.00		6.74	9.77
...	124½	120	125	115	120†	96½	1,500	31,000	7% cum. pfd.	100	393,000	7.00			
25½	26⅞	22	35	7½	15⅛	3½	24,500	289,000	Amer. Agric. Chem.	100	333,000		Yr. Je. '30		Nil
52⅜	55⅜	44½	89⅞	13	27	11	81,900	2,575,400	Amer. Com. Alc. (new)	20	375,000				d1.27
26½	28⅜	26	29¼	9⅜	15⅛	7	6,700	117,500	Archer Dan. Midland	No	550,000	1.00	Yr. Aug. 30		1.68
38½	38¼	32	39½	9	25⅛	7*	20,600	162,600	Atlas Powder Co.	No	261,438			.59	2.67
...	83	79	83½	60	79½	45½	840	8,264	6% cum. pfd.	100	96,000	6.00			
61½	66	55½	71½	23½	41⅛	13½	28,600	161,100	Columbian Carbon	No	538,420	2.00		3.02	5.04
31½	33⅞	28¾	57½	9	13½	3½	320,100	7,617,500	Comm. Solvents	No	2,530,000	.60		.83	1.07
...	78	70½	90⅝	45⅜	55⅜	24¼	61,600	1,640,100	Corn Products	25	2,530,000	3.00		3.54	4.82
140	140	136	145½	117½	140	99½	160	12,585	7% cum. pfd.	100	250,000	7.00			
95⅜	95⅞†	86½	95⅞	32½	59¾	22	353,400	6,136,560	DuPont de Nemours	20	11,008,512	2.00		4.29	4.67
...	115½	107⅜	117	97⅛	105½	80¾	10,600	55,000	6% cum. deb.	100	1,098,831	6.00			
81	84½	77¼	89¾	46	87¼	35¼	35,100	634,018	Eastman Kodak	No	2,261,000	3.00		5.78	8.84
...	125	124	130	110	125	99	540	2,630	6% cum. pfd.	100	62,000	6.00			
45	47⅛	42½	49⅜	16½	28⅜	10	34,200	857,400	Freeport Texas Co.	No	730,000	2.00		3.26	w4.77
61½	68⅛†	58¼	68⅜	15	29½	13⅜	19,500	285,876	Hercules Powder Co.	No	606,234	1.50		1.04	2.61
109	110½†	108	110½	85	95	70½	480	5,050	7% cum. pfd.	100	114,241	7.00			
2¼	2⅜	1⅞	5⅛	⅛	3½	¼	4,300	167,400	Intern. Agric.	No	450,000		Yr. Je.'30		1.68
15½	15½	10½	23½	5	15	3¾	1,600	26,000	7% cum. prior pfd.	100	100,000	7.00	Yr. Je. '30		14.58
22	22¼	20⅞	23¾	6¾	12½	3½	321,400	8,645,437	Intern. Nickel	No	14,584,000			.22	.67
16	18	14¾	22	7½	11	8	3,600	72,300	Kellogg (Spencer)	No	598,000	.60			h1.14
28½	31¼	24¼	50	10¾	22	9	39,700	880,900	Liquid Carbonic Corp.	No	342,000			2.96	5.22
36	42	32	46⅜	14	20⅞	9	55,200	611,400	Mathieson Alkali	No	650,426	1.50		1.88	2.96
80	83†	73	83	25	30¼	13⅜	13,800	216,266	Monsanto Chem.	10	429,000	1.25		2.98	1.73
135⅜	138	135	140	43½	92	45	1,800	39,000	National Lead	100	310,000	5.00			7.58
...	123	122	128½	101	125	87	300	7,155	7% cum. "A" pfd.	100	244,000	7.00			
100	102	100	109¼	75	105	61	600	4,230	6% cum. "B" pfd.	100	103,000	6.00			
4	5	3⅜	7½	1⅜	4⅜	1	9,100	196,700	Tenn. Corporation	5	858,204	1.00			1.21
40½	44½	39	45½	15½	26⅜	12	80,500	1,773,100	Texas Gulf Sulphur	No	2,540,000	2.00		3.52	5.50
47½	48⅜	42⅜	51⅜	19¼	36⅜	15½	193,400	2,741,500	Union Carbide & Carb.	No	9,001,000	1.20		2.00	3.12
38	37⅞†	31½	37½	10½	18	6⅜	37,400	708,300	United Carbon Co.	No	398,000			—	1.43
53	64½	45	94	13½	36½	13½	58,100	2,602,800	U. S. Ind. Alc. Co.	No	373,846			—	z2.96
22½	24¼	19⅜	36½	7⅜	23⅜	5½	74,400	1,337,400	Vanadium Corp. of Amer.	No	378,367				2.95
...	3⅜	2½	7⅜	⅛	2⅜	¼	77,000	432,800	Virginia Caro. Chem.	No	487,000		Yr. Je. '30		Nil
14½	16½	13	26½	3⅜	11¼	3½	4,000	87,400	6% cum. part. pfd.	100	213,000		Yr. Je. '30		2.63
58½	59	57¼	63½	35⅜	69¾	20	700	12,920	7% cum. prior pfd.	100	145,000		Yr. Je. '30		11.96
15⅞	17⅛	14	20½	5	12⅛	1	3,400		Westvaco Chlorine Prod.	No		1.00		1.79	2.51
NEW YORK CURB															
16½	16½†	12½	16½	3½	8½	1⅜	118,900	1,184,500	Amer. Cyanamid "B"	No	2,404,000			.21	
¾	3⅜	3½	4½	1	2½	½	10,300	192,500	Brit. Celanese Am. Rcts.	2.43	2,806,000				
101	106	101	110	27	55	8	850	31,119	Celanese 7% cum. part. 1st pfd.	100	143,000	7.00			
...	85	84	90	51	64½	17	125	118,200	" 7% cum. prior pfd.	100	115,000	7.00			
...	17½	12½	26⅞	2	5⅜	1½	3,100	80,300	Celluloid Corp.	No	195,000				
11½	11	10⅜	11⅜	4½	6½	4½	2,400	134,900	Courtaulds, Ltd.	1£					
73⅜	74⅜	69⅛	78	30	39	21⅛	5,600	62,600	Dow Chemical	No	630,000	2.00			3.44
...	4⅞	3½	8	⅛	1⅜	½	2,800	62,100	Duval Texas Sulphur	No	500,000				
...	19	18½	19	8	...	...	200	6,800	Heyden Chemical Corp.	10	150,000	1.00			
8½	8½	4⅜	8½	4½	2⅞	2½	100	3,250	Imperial Chem. Ind.	1£				1.21	
16½	17	16	20⅜	8	20⅜	6½	1,400	33,360	Shawinigan W. & P.	No	2,178,000	1.00			
CLEVELAND STOCK EXCHANGE															
...	20	16	24	16†	25	21½	272	1,083	Cleve-Cliffs Iron $5 pfd.	No	498,000	5.00		—	11.42
...	75	72	78	30	40	21½	255	14,210	Dow Chemical Co.	No	630,000	2.00			3.44
...	...	...	...	...	...	...		568	Dow Chemical Co., pfd.	100	3,000,000	7.00			
...	135	131	136	110	...	...	113	2,450	National Carbon, pfd.	100	5,600,000	7.00			
PHILADELPHIA STOCK EXCHANGE															
58	58	54⅛	38*	25¼	40	19⅛	300	5,890	Pennsylvania Salt	50	150,000	3.00	Yr. Je. '30		

1933 December Last	1933 High	1933 Low	1932 High	1932 Low	Sales In December	Sales During 1933	Bonds	Date Due	Int. %	Int. Period	Out-standing $
NEW YORK STOCK EXCHANGE											
95	95†	88	95	70½	80	62	47	803	Amer. Cyan. deb. 5s	1942	5	A. O.	4,554,000
83	85	82½	89	64	80	54½	295	3,781	Amer. I. G. Chem. conv. 5½s	1949	5½	M. N.	29,933,000
3⅞	5½	3½	14½	2⅛	18	1	340	1,534	Anglo-Chilean s. f. deb. 7s	1945	7	M. N.	14,600,000
63	63	55½	74⅞	37	60	34½	39	441	By-Products Coke Corp. 1st 5½s "A"	1945	5½	M. N.	6,629,000
...	101	101	104½	100½	104⅞	100⅝	4	625	Corn Prod. Refin. 1st s. f. 5s	1934	5	M. N.	1,822,000
62	62	62	65	38½	54½	32	14	257	Int. Agric. Corp. 1st coll. tr. stamped to 1942	1942	5½		
5½	6	4¾	14⅞	2½	15½	½	357	28,156	Lautaro Nitrate conv. 6s	1954	6	J. J.	32,000,000
97⅜	97¾	95½	99⅛	87	97¾	67	31	877	Montecatini Min. & Agric. deb 7s with warrants	1937	7	J. J.	8,188,000
...	56	49½	62	33¼	59	17	20	452	Ruhr chemical s. f. 6s	1948	6	A. O.	3,578,000
...	99	99	99½	87	90	66	6	1,061	Solvay Am. Invest. 5% notes	1942	5	M. S.	15,000,000
...	70	65	76	50	66	39	13	266	Tenn. Corporation deb. 6s. "B"	1944	6	M. S.	3,308,000
62½	64¾	58½	81	34¼	75	30	122	1,757	Vanadium Corp. conv. 5s	1941	5	A. O.	5,000,000
NEW YORK CURB													
73	76	71	80½	49	76	55	437,000	3,837,000	Shawinigan W. & P. 4½s. "A"	1967	4½	A. O.	35,000,000
...	75½	71	80½	50	76	55	154,000	1,923,300	4½s., series "B"	1968	4½	M. N.	16,108,000
...	102½	101	103½	101	103¼	99	4,000	36,100	Westvaco Chlorine Prod. 5½s	1937	5½	M. S.	1,992,000

b 11 mos. ending Aug. 30 w 13 mos.; Before inventory adjustment; •New Low; †New High

The Trend of Prices

Recovery Moves Forward

Business was good in December. Reports coming in from all parts of the country and particularly from the South indicated a very satisfactory volume of retail sales. When comparison is made with the holiday period of a year ago the improvement is even more striking. Wholesale trade was active and stocks in most lines are not excessive. Quite naturally repeal of the 18th amendment aided considerably in increasing the business total.

Heavy Industries Slow

The so-called heavy industries followed the usual seasonal trend and operated at reduced activity. However steel operations actually improved in the 1st part of the month. Automobile production, on the other hand, declined sharply as the companies paused to tool up for the new models. Leaders of the industry are confident that '34 will show still greater improvement and a welcome note of optimism reigns in Detroit. This is likewise true of the steel centers. The public works program, larger rail purchasing by the railroads, and better demand drom the automobile industry is expected to increase 1st quarter tonnage. Freight car loadings while off seasonally continued to run comfortably ahead of '32.

Business sentiment really improved in December. Widespread fear of an orgy of uncontrolled inflation and "printing press" money which dominated the minds of business men from one end of the country to the other, and which caused November business to slump, seemed to dissolve suddenly. Belief that the more rabid of the inflationists had been spiked, at least for the time being, gave the situation a better face. It was felt, in most quarters that the President would be able to hold this group in Congress in check. Even the staggering budget figures presented by President Roosevelt failed to upset the optimistic feeling, but it would be a decided mistake to think that it did not have a very sobering effect. The country at large was distinctly shocked to find out just how much the "New Deal" has and will cost. Only the very frankness of the President in not concealing or misrepresenting saved the situation. To raise $6,000,000; re-finance $4,000,000 more in the 1st 6 months of '34; and to look forward to a debt of some 31 billion at the end of '35 is a financial strain that cannot be minimized.

Stock and commodity markets closed out the year generally in a fairly firm manner, indicating a bullish sentiment on the part of the public for '34 business. Despite a great deal of uncertainty, misgivings and bewilderment, the psychology of the country was decidedly better as the new year opened.

Practically all of the industries which consume large tonnages of chemicals seemed certain to move forward in '34. Glass industry has not slackened the swift pace reached as a result of the end of prohibition; increased building is expected to help the glass, paint and naval stores industries. The textile field was handicapped severely in the last quarter of '33 by labor troubles. With these apparently settled producers of chemicals for the industry expect better business. Shoe production in '33 was of record proportions. It is thought unlikely that the final production figure will be bettered in '34. Belief is widespread that the paper industry will enjoy better tonnages, but that the petroleum industry will curtail as a result of the production control imposed by the government.

Le Molybdene of Paris is exploiting Moroccan molybdenum ore deposits at Azagur. Concentration plant working up 100 tons of ore a day by selective flotation has an output of 25 tons of concentrate, containing over 85% molybdenum disulfide.

Monthly Business Statistics

	December 1932	November 1933	November 1932	October 1933	October 1932	September 1933	September 1932
Auto Production	.....	63,904	59,557	138,475	48,702	196,082	84,150
Bldg. Contracts*†	.....	$162,330	$105,302	$145,367	$107,273	$122,615	$127,526
Coal, soft, output, tons	.....	30,582	30,632	29,656,000	32,677,000	29,500,000	.....
Beehive coke, output tons	.....	.....	.....	45,000	67,600	59,500	.....
By-product, coke, output, tons	.....	.....	.....	2,559,265	1,738,716	2,712,050	.....
Cotton consump., bales	.....	.....	503,722	503,873	501,893	499,486	492,742
Factory Employment‡	.....	.....	.....	74.0	59.9	73.9	60.3
Payroll totals‡	.....	.....	.....	53.6	39.9	53.3	38.1
Failures, Dun & Brad	.....	.....	.....	1,206	2,273	1,116	2,182
Merch, Imports†	.....	$128,000	$104,468	$151,000	$105,499	$147,000	$98,411
Merch, Exports†	.....	$184,000	$138,834	$194,000	$153,090	$160,000	$132,037
Newsprint Prod. (Can.) tons	.....	193,718	161,334	191,452	157,506	179,416	150,691
Newsprint Prod. U. S.	.....	81,567	81,662	82,052	76,731	72,907	70,621
Newsprint, Newfoundland	.....	26,538	21,195	25,916	20,641	23,701	21,532
Newsprint Prod., total	.....	309,244	265,035	300,904	256,076	277,033	243,896
Newsprint Ship. (Can.) tons	.....	201,102	164,327	190,326	157,568	183,971	152,633
Newsprint Ship. U. S.	.....	86,829	83,922	81,580	76,922	75,008	73,234
Newsprint Ship. total Can. & U. S.	.....	287,931	248,249	271,906	234,490	258,979	225,867
Newsprint stocks (Can.) tons	.....	30,858	48,461	37,237	48,062	41,826	50,029
Newsprint stocks, U. S.	.....	16,976	32,790	19,152	33,095	21,407	35,982
Newsprint stocks, total Can. & U. S.	.....	59,534	81,201	56,389	81,157	63,233	86,011
Plate Glass output, sq. ft.	.....	.....	.....	5,793,693	3,935,416	8,924,666	3,405,854
Shoe Production, pairs	.....	.....	25,148,928	31,397,954	33,069,741	30,886,226	33,884,742
Steel Ingots	861,034	1,540,882	1,032,221	2,111,842	1,087,058	2,310,982	991,858
Tire Shipments	1,454,960	.....	1,369,038	2,536,971	1,799,136	3,503,365	3,082,285
Tire Production	1,586,145	.....	1,842,836	3,428,658	2,568,641	3,999,239	2,538,720
Tire Inventory	6,115,487	.....	5,963,554	8,461,735	6,875,980	7,594,506	6,096,098
Chemical							
Elect. Energy, consumption°	.....	.....	130.1	158.9	119.0	159.6	126.8
Stocks, mfg. goods°	.....	.....	121	121	122	120	121
Stocks, raw materials°	.....	.....	122	116	122	104	112
Dept. Labs. chem. price index‡	.....	79.2	79.7	78.6	79.8	78.8	79.8
Dept. Labor fert. price index‡	.....	67.8	63.5	67.6	63.4	66.6	63.6
Dept. Labor mixed fert. index‡	.....	68.5	65.6	68.3	66.5	67.8	66.9
Dept. Labor chem. & allied emp.‡	.....	98.1	76.0	98.7	75.5	95.9	73.4
Dept. Labor chem. emp.‡	.....	121.9	85.3	120.9	84.7	178.6	86.3
Dept. Labor fert. emp.‡	.....	72.0	46.0	72.1	45.1	65.2	42.5
Dept. Labor paints & varnish emp.‡	.....	77.8	67.1	80.4	68.2	80.4	66.9
Dept. Labor pet. refining emp.‡	.....	73.4	61.5	72.7	61.8	70.0	63.4
Dept. Labor rayon & emp.‡	.....	197.7	142.8	197.3	139.6	196.7	120.9
Dept. Labor soap emp‡	.....	112.1	98.3	116.7	96.9	116.0	94.5
Dept. Labor payrolls, chem. & allied Products‡	.....	76.9	60.8	77.8	60.9	74.2	59.5
Dept. Labor payrolls, chemical‡	.....	86.3	61.6	87.0	61.7	81.8	58.5
Dept. Labor payrolls, fertilizer‡	.....	44.2	30.8	48.0	30.1	42.5	29.6
Dept. Labor payrolls, paint & varnish‡	.....	58.9	51.7	61.0	54.6	59.2	51.6
Dept. Labor. payrolls, pet refining‡	.....	60.1	52.0	59.8	52.2	57.6	54.6
Dept. Labor payrolls, rayon‡	.....	172.9	120.2	172.4	118.3	168.3	110.8
Dept. Labor payrolls, soap‡	.....	91.6	83.0	92.6	84.4	91.9	83.3

*37 states, F. W. Dodge Corp.; †—000 omitted; °—monthly average 1923-25 = 100, Dept. of Com.; ‡1926—100.

Weekly Business Statistics

Week Ending	Carloadings 1933	Carloadings 1932	Electrical Output* 1933	Electrical Output* 1932	N. Y. Journal of Commerce Price Index‡	National Fertilizer Association Indices: Metals	Fats & Oils	Chem. & Drugs	Mixed Fert.	Fert. Mat.	All Groups	Dept. of Labor Chem. & Drug Price Index	Steel Activity %	Fisher's Index Purch. Power
Dec. 2	495,425	547,095	1,553,744	1,510,337	....	78.6	46.7	88.2	70.9	65.6	68.5	73.7	28.3	140.0
Dec. 9	537,503	520,607	1,619,157	1,518,922	71.6	78.9	45.1	88.2	70.9	65.6	68.8	73.6	31.5	139.5
Dec. 16	554,832	515,769	1,644,018	1,563,384	71.2	79.0	40.5	88.2	72.8	65.7	68.1	73.4	34.2	138.9
Dec. 23	527,067	494,510	1,656,616	1,554,473	70.7	78.2	38.6	88.2	72.8	65.6	67.8	73.4	31.6	140.1
Dec. 30	450,622	405,311†	1,539,002	1,414,710	71.9	79.2	42.3	88.2	72.8	65.6	68.4	73.8	29.3	139.3

*Kilowatt hours, 000 omitted; †A total of 28,960,910 cars were loaded in '33; an increase of 780,958 or 2.8% over '32 but a reduction of 8,190,339 or 22% when compared with '31; ‡Low Feb. 4, 52.5.

Prices Current

Heavy Chemicals, Coaltar Products, Dye-and-Tanstuffs, Colors and Pigments, Fillers and Sizes, Fertilizer and Insecticide Materials, Naval Stores, Fatty Oils, etc.

Chemical prices quoted are of American manufacturers for spot New York, immediate shipment, unless otherwise specified. Products sold f. o. b. works are specified as such. Imported chemicals are so designated. Resale stocks when a market factor are quoted in addition to makers' prices and indicated "second hands."

Oils are quoted spot New York, ex-dock. Quotations f.o.b. mills, or for spot goods at the Pacific Coast are so designated.

Raw materials are quoted New York, f. o. b., or ex-dock. Materials sold f. o. b. works or delivered are so designated.

The current range is not "bid and asked," but are prices from different sellers, based on varying grades or quantities or both. Containers named are the original packages most commonly used.

Purchasing Power of the Dollar: 1926 Average—$1.00 - 1933 Average $1.56 - Jan. 1933 $1.76 - Dec. 1933 $1.40

	Current Market	1933 Low	1933 High	1932 Low	1932 High
Acetaldehyde, drs lc-1 wks...lb.	.18½	.21	.18½	.21	.18½	.21
Acetaldol, 50 gal dr.....lb.	.27	.31	.27	.31	.27	.31
Acetamide.....lb.	.95	1.35	.95	1.35	.95	1.35
Acetanilid, tech, 150 lb bbl...lb.	....	.26	...	.26	.20	.26
Acetic Anhydride, 92-95%, 100 lb cbys.....lb.	.21	.25	.21	.25	.21	.25
Acetin, tech drums.....lb.	.30	.32	.30	.32	.30	.32
Acetone, tanks.....lb.	....	.10	.08	.10	...	.10
Acetone Oil, bbls NY.....gal.	1.15	.25	1.15	1.25	1.15	1.25
Acetyl Chloride, 100 lb cby...lb.	.55	.68	.55	.68	.55	.68
Acetylene Tetrachloride (see tetrachlorethane).....						
Acids						
Acid Abietic.....	....	.06	.06	.12	.12	.12
Acetic, 28% 400 lb bbls c-1 wks .....100 lb.	....	2.91	2.65	2.91	2.40	2.75
Glacial, bbl c-1 wk....100 lb.	....	10.02	9.14	10.02	8.35	9.14
Adipic.....	.72	.72	.72	.72	.72	.72
Anthranilic, refd, bbls.....lb.	.85	.95	.85	.95	.85	.95
Technical, bbls.....lb.	.65	.70	.65	.70	.65	.70
Battery, cbys.....100 lb.	1.60	2.25	1.60	2.25	1.60	2.25
Benzoic, tech, 100 lb bbls....lb.	.40	.45	.35	.45	.35	.45
Boric, powd, 250 lb. bbls. .....lb.	.0425	.05	.0425	.05	.0425	.07
Broenner's, bbls.. .....lb.	1.20	1.25	1.20	1.25	1.20	1.25
Butyric, 100% basis cbys....lb.	.80	.85	.80	.85	.80	.85
Camphoric.....lb.	....	5.25	...	5.25	.....	5.25
Chlorosulfonic, 1500 lb drums wks.....lb.	.04½	.05½	.04½	.05½	.04½	.05½
Chromic, 99½%, drs.....lb.	....	.13½	.11½	.14½	.11½	.14½
Chromotropic, 300 lb bbls....lb.	1.00	1.06	1.00	1.06	1.00	1.06
Citric, USP, crystals, 230 lb. bbls.....lb.	.29	.30	.29	.30	.29	.33½
Cleve's, 250 lb bbls.....lb.	.52	.54	.52	.54	.52	.54
Cresylic, 95%, dark drs NY.gal.	....	.50	.38	.50	.40	.47
97-99%, pale drs NY.....gal.	....	.55	.40	.55	.42	.50
Formic, tech 90%, 140 lb. cby.....lb.	.11	.13	.10½	.13	.10½	.12
Furoic, tech., 100 lb. drums.lb.	....	.35	...	.35	.....	.....
Gallic, tech, bbls.....lb.	.60	.70	.60	.70	.60	.70
USP, bbls.....lb.	....	.74	...	.74	.....	.74
Gamma, 225 lb bbls wks.....lb	.77	.79	.75	.79	.75	.80
H, 225 lb bbls wks.....lb.	.65	.70	.60	.70	.60	.65
Hydriodic, USP, 10% soln cby lb.	.50	.51	.50	.51	.59	.67
Hydrobromic, 48%, coml, 155 lb cbys wks.....lb.	.45	.48	.45	.48	.45	.48
Hydrochloric, CP, see Acid Muriatic.....						
Hydrocyanic, cylinders wks .lb.	.80	.90	.80	.90	.80	.90
Hydrofluoric, 30%, 400 lb bbls wks.....lb.	....	.07	.06	.07	.....	.06
Hydrofluosilicic, 35%, 400 lb. bbls wks.....lb.	.11	.12	.11	.12	.11	.12
Hypophosphorous, 30%, USP, demijohns .....lb.	.75	.80	.75	.80	.75	.85
Lactic, 22%, dark, 500 lb bbls lb.	.04	.04½	.04	.04½	.04	.04½
44%, light, 500 lb bbls.....lb.	.11½	.12	.11½	.12	.11½	.12
Laurent's, 250 lb bbls.... ...lb.	.36	.37	.36	.37	.36	.42
Linoleic.....lb.	.16	.16	.16	.16	.16	.16
Maleic, cry. kegs.....lb.	....	.35	...	...	...	...
Malic, powd, kegs.....lb.	.45	.60	.45	.60	.45	.60
Metanilic, 250 lb bbls.....lb	.60	.65	.60	.65	.60	.65
Mixed Sulfuric - Nitric..... tanks wks.....N unit	.06½	.07½	.06½	.07½	.07	.07½
tanks wks.....S unit	.008	.01	.008	.01	.008	.01
Monochloroacetic, tech bbl...lb.	.16	.18	.16	.18	.16	.18
Monosulfonic, bbls.....lb.	1.50	1.60	1.50	1.60	1.55	1.70
Muriatic, 18 deg, 120 lb cbys c-1 wks.....100 lb.	....	1.35	...	1.35	.....	1.35
tanks, wks.....100 lb.	....	1.00	...	1.00	.....	1.00
20 degrees, cbys wks...100 lb.	....	1.45	...	1.45	.....	1.45
N & W.....250 lb bbls	.85	.95	.85	.95	.85	.95
Naphthenic, drums .....lb.	.10	.11½	.10	.11½	.....	.....
Naphthionic, tech.....250 lb.	.60	.65	.60	.65	.60	.65
Nitric, 36 deg, 135 lb cbys c-wks. .....100 lb.	....	5.00	...	5.00	.....	5.00
40 deg, 135 lb cbys, c-1 wks.....100 lb.	....	6.00	...	6.00	.....	6.00
Oxalic, 300 lb bbls wks NY....lb.	.11⅛	.12⅜	.11	.12⅜	.11	.11½
Phosphoric 50%, U. S. P.....lb.	....	.14	...	.14	.....	.14
Syrupy, USP, 70 lb drs....lb.	....	.14	...	.14	.....	.14
Picramic, 300 lb bbls.....lb.	.65	.70	.65	.70	.65	.70
Picric, kegs.....lb.	.30	.50	.30	.50	.30	.50
Pyrogallic, crystals..... .....lb.	1.40	1.45	1.40	1.45	1.45	1.60
Salicylic, tech, 125 lb bbl.....lb.	.33	.37	.33	.37	.33	.37
Sebacic, tech, drum.....lb.	.58	.58	.58	.58	.....	.....
Sulfanilic, 250 lb. bbls.....lb.	.18	.19	.15	.17	.14½	.16
Sulfuric, 66 deg, 180 lb cbys lc-1 wks.....100 lb.	1.60	1.95	1.60	1.95	1.60	1.95
tanks, wks, ton	....	15.00	....	15.00	.....	15.00
1500 lb dr wks.....100 lb.	1.50	1.65	1.50	1.65	1.50	1.65
60°, 1500 lb dr wks....100 lb.	1.27½	1.42½	1.27½	1.42½	1.27½	1.42½
Oleum, 20%, 1500 lb. drs lc-1 wks.....ton	....	18.50	....	18.50	.....	18.50
40%, lc-1 wks net.....ton	....	42.00	....	42.00	.....	42.00
Tannic, tech, 300 lb bbls...lb.	.23	.40	.23	.40	.23	.40
Tartaric, USP, gran. powd, 300 lb bbls.....lb.	....	.25	.20	.25	.20	.25½
Tobias, 250 lb bbls.....lb.	.75	.80	.75	.80	.75	.85
Trichloroacetic bottles.....lb.	2.00	2.75	2.00	2.75	.....	2.75
Kegs.....lb.	....	1.75	....	1.75	.....	2.00
Tungstic, bbls.....lb.	1.40	1.70	1.40	1.70	1.40	1.70
Albumen, blood, 225 lb bbls...lb.	.35	.43	.35	.43	.35	.40
dark.....bbls., lb.	.10	.17	.10	.17	10	.20
Egg, edible .....lb.	.85	.90	.74	.90	.75	.90
Technical, 200 lb cases...lb.	.62	.66	.62	.66	.62	.66
Vegetable, edible.....lb.	.65	.70	.60	.70	.60	.65
Technical.....lb.	.50	.55	.50	.55	.50	.55
Alcohol Butyl, Normal, 50 gal drs c-1 wks.....lb.	....	.10½	....	.10½	.123	.1595
Drums, 1-c-1 wks.....lb	....	.11	....	.11	.128	.1645
Tank cars wks.....lb.	....	.09½	....	.09½	.113	.143
Secondary tank .....lb.	....	.076	....	....	.....	....
drums carlots .....lb.	....	.086	....	....	.....	....
Amyl (from pentane) Tanks wks .....lb.	....	.143	.143	.176	.176	.203
Capryl, tech, drums.....lb.	....	.85	....	.85	.....	.85
Diacetone, tanks.....lb.	.15¾	.16¾	.15¾	.16¾	.....	.....
Ethyl, USP, 190 pf, 50 gal. bbls‡.....gal.	2.44½	2.58½	2.44½	2.65	2.55	2.65
No. 5. *188 pf, 50 gal. drs. drums extra†.....gal.	....	.351*	....	.385*	.27	.396
No. S. D. 1, tanks .....gal.	....	.304	....	.304	.....	.....
Furfuryl, tech., 500 lb. drs.lb	....	.40	.40	.45	.....	.....
Isobutyl, ref., gal. drs.....gal.	....	.75	....	.75	.....	.75
Isopropyl, ref, gal drs.....gal.	....	.50	.45	.50	.45	.65
Propyl Normal, 50 gal dr..gal.	....	.75	....	.75	.....	.75
Aldehyde Ammonia, 100 gal drlb.	.80	.82	.80	.82	.80	.82
Alpha-Naphthol, crude, 300 lb. bbls.....lb.	.65	.70	.65	.70	.57	.65
Alpha-Naphthylamine, 350 lb. bbls.....lb.	.32	.34	.32	.34	.32	.34
Alum Ammonia, lump, 400 lb bbls, 1-c-1 wks.....100 lb.	3.00	3.25	3.00	3.25	3.00	3.25
Chrome, 500 lb casks, wks .....100 lb.	....	6.50	4.50	6.50	4.50	5.25
Potash, lump, 400 lb casks wks.....100 lb.	3.00	3.50	3.00	3.50	3.00	3.50
Soda, ground, 400 lb bbls wks.....100 lb.	3.50	3.75	3.50	3.75	3.50	3.75
Aluminum Metal, c-1 NY.100 lb.	22.90	24.30	22.00	24.30	22.90	24.30
Chloride Anhyd., 99%, wks.lb.	.07	.12	....	....	.....	....
93% grade, wks.....lb.	.04	.08	....	....	.....	....
Hydrate, 96%, light, 90 lb. bbls.....lb.	.15	.16½	.15	.16½	.15	.17
Palmitate, bbls.....lb	.19	.20	....	....	.....	.....
Resinate, pp., bbls.....lb.	.12½	.14	....	....	.....	.....
Stearate, 100 lb bbls.....lb.	.17	.18	.12½	.18	.15	.21
Sulfate, Iron, free, bags c-1 wks.....100 lb.	1.90	1.95	1.90	1.95	1.90	1.95
Coml, bags c-1 wks .100 lb.	1.35	1.50	1.25	1.50	1.25	1.30
Aminoazobenzene, 110 lb kegs lb.	....	1.15	....	1.15	.....	1.15
Ammonia						
Ammonia anhydrous Com. tanks	.04½	.05½§	.04½	.05½	.05	.05½
Ammonia, anhyd. 100 lb cyl...lb.	.15½	.15½	.15½	.15½	.15½	.15½
Water, 26°, 800 lb dr del...lb.	.02½	.03	.02½	.03	.02½	.03
Ammonia, aqua 26° tanks.... NH cont.....	....	.05	.....	.05	.....	.....
Ammonium Acetate .....lb.	.26	.33	.26	.33	.26	.39
Bicarbonate, bbls., f.o.b. plant .....100 lb.	....	5.15	....	5.15	.....	5.15
Bifluoride, 300 lb bbls.....lb.	.15½	.17	.15½	.17	.14½	.22
Carbonate, tech, 500 lb cs..lb.	.08	.12	.08	.12	.08	.12
Chloride, white, 100 lb. bbls wks .....100 lb.	5.00	5.25	4.45	5.25	4.45	5.15
Gray, 250 lb bbls wks...lb.	5.25	5.75	5.25	5.75	5.25	5.75
Lump, 500 lb cks spot...lb.	.10	11	.10	.11	.10½	.11½
Lactate, 500 lb bbls.....lb.	.15	.16	.15	.16	.15	.16
Linoleate.....lb.	....	.11	....	.11	.11	.15
Nitrate, tech, casks.....lb.	.03¾	.05	.03¾	.10	.06	.10
Oleate, drs.....lb.	....	.10	....	.10	.....	.10
Persulfate, 112 lb kegs.....lb.	.20	.22½	.20	.22½	.20	.27½
Phosphate, tech, powd, 325 lb. bbls.....lb.	.08½	.11½	.08½	.11½	.08½	.12
Sulfate, bulk c-1.....100 lb.	....	1.25	1.00	1.25	.90	1.40
Sulfocyanide, kegs.....lb.	....	.50	.36	.50	.36	.48
Amyl Acetate, (from pentane) Tanks del.....lb	....	.13½	...	13½	.157	.17½

†Anhydrous 5c higher. ‡From grain 5c higher. *Delivered metropolitan area, basic price 34c. §Higher price is refrigeration grade.

	Current Market	1933 Low	1933 High	1932 Low	1932 High
Tech., drs del. lb.	.142	.149	.138	.149	.17½	.18
Amyl Alcohol, see Fusel Oil						
Aniline Oil, 960 lb drs & tks. lb.	.15	.17½	.14½	.16	.14½	.16
Annatto, fine lb.	.34	.37	.34	.37	.34	.37
Anthracene, 80% lb.	....	.75	....	....	.....	.....
40% lb.	....	.18	....	....	.....	.....
Anthraquinone, sublimed, 125 lb. bbls lb.	....	.45	...	.45	.45	.55
Antimony, metal slabs, ton lots lb.	.07	.07½	.05½	.07½	.05	.06½
Needle, powd, bbls lb.	.08	.09	.07	.09	.08½	.09
Chloride, soln (butter of) cbys lb.	.13	.17	.13	.17	.13	.17
Oxide, 500 lb bbls lb.	.08½	.11	.07½	.11	.07½	.08½
Salt, 63% to 65%, tins lb.	.22	.24	.20	.24	.20	.24
Sulfuret, golden, bbls lb.	.16	.20	.16	.20	.16	.20
Vermillion, bbls lb.	.38	.42	.38	.42	.38	.42
Archil, conc, 600 lb bbls lb.	.20	.21	.20	.21	.17	21
Double, 600 lb bbls lb	.16	.17	.16	.17	.16	.17
Triple, 600 lb bbls lb.	.16	.17	.16	.17	.16	.17
Argols, 80%, casks lb.	.15	.16	.12	.15	.12½	.13
Crude, 30%, casks lb.	.08	.09	.06½	.09	.07	.07½
Aroclors, wks lb	.18	.30	.18	.30	.18	.40
Arrowroot, bbl lb.	.08½	.08½	....	....	.....	.....
Arsenic, Red. 224 lb kegs, cs. lb.	.14	.14½	.09½	.14½	.09½	.10
White, 112 lb kegs lb.	.04	.05	.04	.05	.04	.05
Asbestine, c-1 wks ton	13.00	15.00	13.00	15.00	.....	15.00
Barium						
Barium Carbonate, precip, 200 lb. bags wks ton	56.50	61.00	56.50	61.00	47.00	57.00
Nat. (witherite) 90% gr. carlots wks bags ton	.....	45.00	.....	.....	.....	.....
Chlorate, 112 lb kegs NY lb.	.15	.16	.13½	.16	.13½	.15
Chloride, 600 lb bbl wks. ton	72.00	74.00	61.50	74.00	63.00	69.00
Dioxide, 88%, 690 lb drs. lb.	.11	.13	.11	.13	.11	.13
Hydrate, 500 lb bbls lb.	.04½	.05	.04½	.05	.04½	.05½
Nitrate, 700 lb casks lb.	.....	.07¼	...	.07¼	.07	.08
Barytes, Floated, 350 lb bbls wks ton	22.50	30.50	22.20	30.50	22.00	24.00
Bauxite, bulk, mines ton	5.00	6.00	5.00	6.00	5.00	6.00
Bayberry, bags lb.	.15	.16	.14½	.17	.....	.....
Beeswax, Yellow, crude bags. lb.	.18	.19	.13	.20	.14½	.24
Refined, cases lb.	.22	.24	.18	.26	.20	.28
White, cases lb.	.32	.35	.30	.35	.30	.36
Benzaldehyde, technical, 945 lb. drums wks lb.	.60	.65	.60	.65	.60	.65
Benzene, 90%, Industrial, 8000 gal tanks wks gal.	.....	.22	.20	.22	.....	.20
Ind. Pure, tanks works gal.	.....	.22	.20	.22	.....	.20
Benzidine Base, dry, 250 lb. bbls lb.	.67	.69	.65	.67	.65	.67
Benzoyl, Chloride, 500 lb drs. lb.	.40	.45	.40	.45	.40	.47
Benzyl Chloride, tech drs lb.	.....	30	...	.30	.....	.30
Beta-Naphthol, 250 lb bbl wk lb.	.....	.24	...	.24	.....	.22
Naphthylamine, sublimed, 200 lb bbls. lb.	1.25	1.35	1.25	1.35	1.25	1.35
Tech, 200 lb bbls lb.	.53	.58	.53	.58	.53	.58
Bismuth, metal	....	1.30	.85	1.30	.....	.....
Bismuth Subnitrate	....	1.40	.95	1.40	.....	.....
Blackstrap, cane, (see Molasses, Blackstrap)						
Blanc Fixe, 400 lb bbls wks. ton	42.50‡	70.00	42.50	75.00	.....	.....
Bleaching Powder, 800 lb drs c-1 wks contract 100 lb.	.....	1.90	1.75	1.90	1.75	2.00
Blood, Dried, fob, NY Unit	.....	2.60	1.55	2.75	1.20	1.90
Chicago, high grade Unit	.....	2.45	...	...	.....	.....
S. American shipt Unit	.....	3.00	1.90	3.00	2.00	2.25
Blues, Bronze Chinese Milori Prussian Soluble lb.	.....	.35	...	.35	.....	.35
Bone, raw, Chicago ton	23.00	25.00	19.00	28.00	20.00	22.00
Bone Ash, 100 lb kegs lb.	.06	.07	.06	.07	.06	.07
Black, 200 lb bbls lb.	.05½	.08½	.05½	.08½	.05½	.08½
Meal, 3% & 50%, Imp. ton	.....	27.50	18.00	27.50	20.00	23.00
Borax, bags lb.	.018	.02	.018	.02	.018	.03½
Bordeaux, Mixture, 16% pwd. lb.	.08½	.10½	.11½	.10½	.11½	.13
Paste, bbls lb.	.08½	.13	.10½	.13	.11½	.13
Brazilwood, sticks, shpmt lb.	26.00	28.00	26.00	28.00	26.00	28.00
Bromine, cases lb.	.36	.43	.36	.43	.36	.43
Bronze, Aluminum, powd blk. lb.	.50	.75	.50	.75	.60	1.20
Gold bulk lb.	.40	.55	.40	.55	.55	1.25
Butanes, com 16.32° group 3 tanks lb.	.02¾	.04	.02¾	.04	.....	.....
Butyl, Acetate, normal drs. lb.	.....	.11	.11	.139	.134	.166
Tank, wks. lb.	.....	.10	.10	.124	.124	.143
Secondary tanks, wks. lb.	....	.08	....	....	.....	.....
Aldehyde, 50 gal drs wks. lb.	.35	.36	.31½	.36	.31½	.36
Carbitol see Diethylene Glycol Mono (Butyl Ether)	.....	....	....	....	.....	.....
Cellosolve (see Ethylene glycol mono butyl ether)						
Furoate, tech., 50 gal. dr. lb.	.....	.60	.50	.60	.....	.50
Lactate, drums lb.	....	.29	....	....	.....	.....
Propionate, drs lb.	.20	.22	.20	.22	.20	.25
Stearate, 50 gal drs. lb.	.25	.25½	.25	.25½	.25	.25½
Tartrate, drs lb.	.55	.60	.55	.60	.55	.60
Cadmium, Sulfide, boxes lb.	.65	.75	.65	.75	.65	.90
Calcium, Acetate, 150 lb bags c-1 100 lb.	.....	3.00	2.50	3.00	2.00	2.50
Arsenate, 100 lb bbls c-1 wks lb.	.....	.07	.05½	.07	.05½	.06
Carbide, drs lb.	.05	.06	.05	.06	.05	.06
Carbonate, tech, 100 lb bags c-1 lb.	1.00	1.00	1.00	1.00	1.00	1.00
Chloride, Flake, 375 lb drs c-1 wks ton	.....	19.50	19.50	21.00	.....	21.00
Solid, 650 lb drs c-1 fob wks ton	.....	17.50	17.50	18.00	.....	18.00
Ferrocyanide, 350 lb. bbls. f.o.b. wks lb.	.....	.17	.17	.17	.....	.....

†F. O. B. destination, 1931 prices are works prices.
‡Lowest price is for pulp; highest for high-grade precipitate.

Current

Calcium Furoate
Cresol

	Current Market	1933 Low	1933 High	1932 Low	1932 High
Calcium Furoate, tech, 100 lb. drums lb	.30	....	.30	....	.30
Nitrate, 100 lb bags ton	26.50	24.00	26.50	34.00	35.00
Palmitate, bbls lb	.19	.20	.16	.19	....	....
Peroxide, 100 lb drs lb	1.25	....	1.25	....	1.25
Phosphate, tech, 450 lb bbls lb	.07½	.08	.07½	.08	.07½	.08½
Resinate, precip., bbls lb	.13	.14	....	....	....	....
Stearate, 100 lb. bbls lb	.17	.18	.12½	.18	.16	.18
Camphor, slabs lb	.58	.59	.35½	.59	....	....
Powder lb	.58	.59	.38	.59	....	....
Camwood, Bark, ground bbls lb	.16	.18	.16	.18	.16	.18
Candelilla Wax, bags lb	....	.10¾	.09	.11	.10	.14
Carbitol, (See Diethylene Glycol Mono Ethyl Ether)	....	....	....	...	....	....
Carbon, Decolorizing, drums c-1 lb	.08	.15	.08	.15	.08	.15
Black, 100-300 lb cases 1c-1 NY lb	.06½	.12	.06	.12	.06	.12
Bisulfide, 500 lb drs 1c-1 NY lb	05½	.06	.05½	.06	.05½	.06
Dioxide, Liq. 20-25 lb cyl lb	..	.06	....	.06	....	.06
Tetrachloride, 1400 lb drs delivered lb	.05½	.06	.05½	.07	.06½	.07
Carnauba Wax, Flor, bags lb	....	.33	.23	.33	.23	.28
No. 1 Yellow, bags lb	.31	.32	.20	.35	.21	.24
No. 2 N Country, bags lb	....	.20	.14	.20	.13	.16
No. 3 N. C. lb	....	.17	.11½	.17	.11	.13
No. 3 Chalky lb	....	.17	.12	.17	.11	.13
Casein, Standard, Domestic ground lb	.12½	.13	.06½	.15	.04¾	.07½
80-100 mesh carlots, bags lb	.13½	.14	....	....	....	....
Cellosolve (see Ethylene glycol mono ethyl ether)	....					
Acetate (see Ethylene glycol mono ethyl ether acetate)	..					
Celluloid, Scraps, Ivory cs lb	.13	.14	.13	.15	.13	.15
Shell, cases lb	.18	.20	.18	.20	.18	.20
Transparent, cases lb	....	.16	....	.16	....	.15
Cellulose, Acetate, 50 lb kegs lb	.80	.90	.80	.90	.80	.90
Chalk, dropped, 175 lb bbls lb	.03	.03¾	.03	.03¾	.03	.03¾
Precip, heavy, 560 lb cks lb	.02	.03½	.02	.03½	.02	.03½
Light, 250 lb casks lb	.02½	.03½	.02½	.03½	.02½	.03½
Charcoal, Hardwood, lump, bulk wks bu.	.18	.19	.18	.19	.18	.19
Willow, powd, 100 lb bbl. wks lb	.06	.06½	.06	.06½	.06	.06½
Wood, powd, 100 lb bbls lb	.04	.05	.04	.05	.04	.05
Chestnut, clarified bbls wks lb	.01½	.02	.01½	.02	.01⅝	.02
25% tks wks lb	....	.01½	.012	.01½	.01¼	.02½
Powd, 60%, 100 lb bgs wks lb	....	.04¾	....	.04¾	....	.04¾
Powd, decolorized bgs wks lb	.04⅞	.05	.04⅞	.05	.04⅞	.06
China Clay, lump, blk mines ton	8.00	9.00	8.00	9.00	8.00	9.00
Powdered, bbls lb	.01	.02	.01	.02	.01	.02
Pulverized, bbls wks ton	10.00	12.00	10.00	12.00	10.00	12.00
Imported, lump, bulk ton	15.00	25.00	15.00	25.00	15.00	25.00
Chlorine, cyls 1c-1 wks contract lb	.07	.08½	.07	.08½	.07	.08½
cyls, cl., contract lb	....	.05½†	....	.05½	....	.05½
Liq tank or multi-car lot cyls wks contract 100 lb	....	1.85	1.75	1.85	1.55	1.75
Chlorobenzene, Mono, 100 lb. drs 1c-1 wks lb	.06	.07½	.06	.07½	.06	.10½
Chloroform, tech, 1000 lb drs lb	....	.20	.15	.20	.15	.16
USP, tins lb	....	.30	....	....	....	....
Chloropicrin, comml cyls lb	.90	1.25	.90	1.35	1.00	1.35
Chrome, Green, CP lb	.28	.29	.28	.29	.28	.29
Commercial lb	.06½	.10	.06½	.10	.06½	.11
Yellow lb	.15	.16	.14	.16	.14	.18
Chromium, Acetate, 8% Chrome bbls lb	.05	.05½	.04¼	.05½	.04¼	.05½
20° soln, 400 lb bbls lb	....	.05½	....	.05½	....	.05½
Fluoride, powd, 400 lb bbl lb	.27	.28	.27	.28	.27	.28
Oxide, green, bbls lb	.22	.23	.19	.23	....	....
Coal tar, bbls bbl.	8.50	9.00	.50	9.00	10.00	10.50
Cobalt Acetate, bbls lb	.75	.80	....	....	....	....
Carbonate tech., bbls lb	1.34	1.40	....	....	....	....
Hydrate, bbls lb	1.66	1.76	....	....	....	....
Linoleate, paste, bbls lb	.39	.40	....	....	....	....
Resinate, fused, bbls lb	....	.12½	....	....	....	....
Precipitated, bbls lb	.41	.42	.41	.42	....	....
Cobalt Oxide, black, bags lb	1.25	1.35	1.15	1.35	1.15	1.45
Cochineal, gray or black bag lb	.36	.42	.36	.42	.38	.57
Teneriffe silver, bags lb	.37	.43	.37	.43	.39	.57
Copper, metal, electrol 100 lb	....	8.25	5.00	9.00	5.05	7.25
Carbonate, 400 lb bbls lb	....	.08	.07	.08	.07	.08
52-54% bbls lb	....	.15½	.15¾	.17¼	....	....
Chloride, 250 lb bbls lb	.17	.18	.17	.18	.17	.25
Cyanide, 100 lb drs lb	.39	.40	.39	.40	.39	.40
Oleate, precip., bbls lb	....	.20	....	....	....	....
Oxide, red, 100 lb bbls lb	.14¾	.15	.14¾	.15	.15	.16
Resinate, precip., bbls lb	.18	.19	....	....	....	....
Stearate, precip., bbls lb	.35	.40	....	....	....	....
Sub-acetate verdigris, 400 lb bbls lb	.18	.19	.18	.19	.18	.19
Sulfate, bbls c-1 wks 100 lb	....	3.75	3.00	3.75	2.75	3.10
Copperas, crys and sugar bulk c-1 wks bags ton	14.00	14.50	14.00	14.50	14.00	14.50
Corn Syrup, 42 deg., bbls. 100 lb	....	3.04	2.61	3.04	....	....
43 deg., bbls 100 lb	....	3.09	2.66	3.09	....	....
Cotton, Soluble, wet, 100 lb bbls lb	.40	.42	.40	.42	.40	.42
Cottonseed, S. E. bulk c-1 ton		*(See Oils and Fats News Section)*				
7% Amm., bags mills ton	13.25	38.00	13.25	38.00	13.25	38.00
Cream Tartar, USP, 300 lb. bbls lb	.17½	.17¾	.14½	.17¾	.15½	.20¼
Creosote, USP, 42 lb cbys lb	.45	.47	.40	.47	.40	.42
Oil, Grade 1 tanks gal.	.11	.12	.11	.12	11	12½
Grade 2 gal.	.10	.12	.10	.12	.10	.11½
Grade 3 gal.	.09	.12	.09	.12	.09	.11½
Cresol, USP, drums lb	....	.11	.10½	.11	.10½	.11

Prices

	Current Market	1933 Low	1933 High	1932 Low	1932 High
Crotonaldehyde, 50 gal dr....lb.	.32	.36	.32	.36	.32	.36
Cudbear, English.....lb.	.19	.25	.16	.25	.16	.17
Cutch, Rangoon, 100 lb bales..lb.		.02¾	.02½	.03	.08¾	.12
Borneo, Solid, 100 lb bale...lb.		.04½	.02½	.04½	.03	.07
Cyanamide, bags c-1 frt allowed Ammonia unit.....		1.07½	.97½	1.07½		.97½
Dextrin, corn, 140 lb bags.100 lb.		3.62	2.89	3.84	2.99	3.67
British Gum, bags .....100 lb.		3.87	3.89	3.92	.....	.....
White, 140 lb bags.....100 lb		3.57	2.94	3.79	2.94	3.37
Potato Yellow, 220 lb bgs..lb.	.07¾	.08¾	.07¾	.09	.08	.09
White, 220 lb bags 1c-1....lb.	.08	.09	.08	.09	.08	.09
Tapioca, 200 lb bags 1c-1...lb.	.06¾	.07¾	.06¾	.08	.07	.08½
Diamylether, wks., drums....lb.		.60	....	....	.....	.....
Diamylphthalate, drs wks...gal.		.20½	....	....	.....	.....
Dianisidine, barrels.....lb.	2.35	2.70	2.35	2.70	2.25	2.70
Dibutylphthalate, wks.....lb.	.20½	.21	.20½	.22	.218	.23½
Dibutyltartrate, 50 gal drs...lb.	.29½	.31½	.29½	.21	.29½	.31½
Dichlorethylene, drums.....gal.	.29	....	....	....	.....	.....
Dichloroethylether, 50 gal drs lb.		.16	....	.16	.....	.16
Dichloromethane, drs wks....lb.		.15	....	....	.....	.....
Diethylamine, 400 lb drs.....lb.	2.75	3.00	2.75	3.00	2.75	3.00
Diethylcarbonate, com. drs...lb.		.35	....	....	.....	.....
90% grade, drs.....lb.		.25	....	....	.....	.....
Diethylaniline, 350 lb drs....lb.	.52	.55	.52	.55	.55	.60
Diethyleneglycol, drs.....lb.	.14	.16	.14	.16	.14	.16
Mono ethyl ether, drs...lb.	.15	.16	.15	.16	.15	.16
Mono butyl ether, drs...lb.		.26	....	.26	.24	.30
Diethylene oxide, 50 gal drs..lb.	.26	.27	.26	.27	.....	.....
Diethylorthotoluidin, drs.....lb.	.64	.67	.64	.67	.64	.67
Diethyl phthalate, 1000 lb. drums.....lb.		.20	.20	.26	.23	.26
Diethylsulfate, technical, 50 gal drums.....lb.		...	....	....	.30	.35
Digtycol Oleate, bbls.....lb.		.16	....	....	.....	.....
Dimethylamine, 400 lb drs, pure 25 & 40% sol. 100% basis.lb.		1.20	....	....	.....	....
Dimethylaniline, 340 lb drs...lb.	.29	.30	.25	.28	.25	.27
Dimethyl phthalate drs.....lb.		.24½	....	....	.....	.....
Dimethylsulfate, 100 lb drs...lb.	.45	.50	.45	.50	.45	.50
Dinitrobenzene, 400 lb bbls...lb.	.17	.19½z	....	.18	.15	.16
Dintrochlorobenzene, 400 lb bbls.....lb.	.14½	.15½	.13	.15	.13	.15
Dinitronaphthalene, 350 lb bbls .....lb.	.34	.37	.34	.37	.34	.37
Dinitrophenol, 350 lb bbls....lb.	.23	.24	.23	.24	.23	.24
Dinitrotoluene, 300 lb bbls....lb.	.15½	.16½	.15	.17	.16	.17
Dioxan (See Diethylene Oxide).....		....	....	....	.....	.....
Diphenyl.....lb.	.15	.25	.15	.40	.20	.40
Diphenylamine.....lb.	.31	.34	.31	.34	.34	.37
Diphenylguanidine, 100 lb bbl lb.	.36	.37	.30	.37	.30	.35
Dip Oil, 25%, drums.....lb.	.23	.25	.23	.25	.26	.30
Divi Divi pods, bgs shipmt..ton		36.00	26.00	36.00	26.00	30.00
Extract.....lb.	.05	.05½	.05	.05½	.05	.05½
Egg Yolk, 200 lb cases .....lb.	.42	.43	.40	.43	.40	.52
Epsom Salt, tech, 300 lb bbls c-1 NY.....100 lb.		2.20	....	2.20	1.70	1.90
Ether, USP anaesthesia 55 lb. drs. .....lb.		.24	.22	.24	.22	.23
(Conc).....lb.	.09	.10	.09	.10	.09	.10
Isopropyl 50 gal. drums ...lb.	.07‡x	.08	.07	.08	.....	.....
Synthetic, wks, drums.....lb.	.08	.09	....	....	.....	.....
Ethyl Acetate, 85% Ester tanks.....lb.	.07½	.08	.07½	.09	.08½	.09
drums.....lb.	.08½	.09	.08½	.10	.09½	.10
Anhydrous, tanks.....lb.	.09	.10	.09	.10	.....	.10
drums.....lb.	.10	.10½	.10	.10½	.....	.10½
Acetoacetate, 50 gal drs....lb.	.65	.68	.65	.68	.65	.68
Benzylaniline, 300 lb drs...lb.	.88	.90	.88	.90	.88	.90
Bromide, tech, drums.....lb.	.50	.55	.50	.55	.50	.55
Chloride, 200 lb drums.....lb.	.22	.24	.22	.24	.....	.22
Chlorocarbonate, cbys.....lb.		.30	....	.30	.....	.30
Ether, Absolute, 50 gal drs.lb.	.50	.52	.50	.52	.50	.52
Furoate, 1 lb tins.....lb.		1.00	1.00	5.00	....	5.00
Lactate, drums works.....lb.	.25	.29	.25	.29	.25	.29
Methyl Ketone, 50 gal drs..lb.		.12½	....	.12½	.....	.30
Oxalate, drums works.....lb.	.37½	.55	.37½	.55	.37½	.55
Oxybutyrate, 50 gal drs wks lb.	.30	.30½	.30	.30½	.....	.30½
Ethylene Dibromide, 60 lb dr..lb.	.65	.70	.65	.70	.65	.70
Chlorhydrin, 40%, 10 gal cbys. chloro, cont.....lb.	75	.85	.75	.85	.7	.85
Dichloride, 50 gal drums....lb.	.05	.06	.05	.09	.0595	.07
Glycol, 50 gal drs wks.....lb.	.26	.28	.25	.28	.25	.28
Mono Butyl Ether drs wks.....		.20	....	.20	.20	.24
Mono Ethyl Ether drs wks	.15	.17	.15	.17	.15	.20
Mono Ethyl Ether Acetate dr. wks.....	.16½	.18	.16½	.18	.16½	.23
Mono Methyl Ether, drs..lb.	.21	.23	.21	.23	.21	.23
Stearate.....	.18	.18	.18	.18	.18	.18
Oxide, cyl.....lb.		.75	....	.75	.75	2.00
Ethylidenaniline.....lb.	.45	.47½	.45	.47½	.45	.47½
Feldspar, bulk pottery .....ton	15.50	16.50	14.00	16.50	15.00	20.00
Powdered, bulk works....ton	13.50	14.50	13.50	14.50	15.00	21.00
Ferric Chloride, tech, crystal 475 lb bbls.....lb.	.05	.07½	.04½	.07½	.04½	.07½
Fish Scrap, dried, wks.....unit		2.50*	1.85	2.75*	1.60	3.00
Acid, Bulk 7 & 3½% delivered Norfolk & Balt. basis...unit		2.50†	1.85	2.50†	1.40	2.40
Fluorspar, 98%. bags.....28.00		35.50	28.00	35.50	28.00	46.00

*& 10; †& 50 xTanks 2c lower.

Formaldehyde

Formaldehyde, aniline, 100 lb.....		....	....	....	.....	.....
drums.....lb.	.37½	.42	.37½	.42	.37½	.42
USP, 400 lb bbls wks.....lb.	.06	.07	.06	.07	.06	.07½
Fossil Flour.....lb.	.02½	.04	.02½	.04	.02½	.04
Fullers Earth, bulk, mines...ton	15.00	20.00	15.00	20.00	15.00	20.00
Imp. powd c-1 bags.....ton	24.00	30.00	24.00	30.00	24.00	30.00
Furfural (tech.) drums wks,. .lb.	.10§	.15	.10	.15	.....	.10
Furfuramide (tech) 100 lb dr..lb.		.30	....	.30	.....	.30
Furfuryl Acetate, 1 lb tins....lb.		5.00	....	5.00	.....	5.00
Fusel Oil, 10% impurities....lb.	.16	.18	.14½	.18	.....	.....

‡Higher price, refined. §Tanks, 1c lower zHigher price is for purified.

Current

Fustic
Hoof Meal

	Current Market		1933 Low	1933 High	1932 Low	1932 High
Fustic, chips	lb.	.04	.05	.04	.05	.04	.05
Crystals, 100 lb boxes	lb.	.20	.23	.18	.23	.18	.20
Liquid 50°, 600 lb bbls	lb.	.08	.10	.07	.10	.07	.08
Solid, 50 lb boxes	lb.	.16	.18	.14	.18	.14	.16
Sticks	ton	25.00	26.00	25.00	26.00	25.00	26.00
G Salt paste, 360 lb bbls	lb.	.42	.43	.42	.43	.42	.50
Gall Extract	lb.	.18	.20	.18	.20	.18	.20
Gambier, common 200 lb ca.	lb.	.04	.05½	.03	.07	.06½	.07
Singapore cubes, 150 lb bg.	lb.	.06	.07	.05¼	.08	.07¾	.09
Gelatin, tech, 100 lb cases	lb.	.45	.50	.45	.50	.45	.50
Glauber's Salt, tech, c-l wks.	100 lb.	1.10	1.30	1.00	1.70	1.00	1.70
Glucose (grape sugar) dry 70-80° bags c-l NY	100 lb.	3.24	3.34	3.24	3.34	3.24	3.34
Tanner's Special, 100 lb bags	100 lb.		2.33	....	2.33	2.36	2.75
Glue, medium white, bbls	lb.	.13½	.19	.12	.23	.15½	.20
Pure white, bbls	lb.	.23	.28	.18	.28	.18	.27
Glycerin, CP, 550 lb drs	lb.		.11	.10½	.11	.09¾	.11½
Dynamite, 100 lb drs	lb.	.10	.10¼	.07½	.10¼	.07¼	.09¾
Saponification, tanks	lb.	.06¾	.07	.05	.08	.04½	.06¾
Soap Lye, tanks	lb.	.06¼	.06½	.04	.06½	.03¾	.05
Glyceryl Stearate, bbls	lb.		.18	.17	.18	.....	.17
Graphite, Crystalline, 500 lb. bbls	lb.	.0	.0	.04	.05	.04	.05
Flake, 500 lb bbls	lb.	.08	.16	.08	.16	.08	.16
Amorphous bbls	lb.	.03	.0	.03	.04	.03	.04
Gums							
Gum Accroides, Red, coarse and fine 140-150 lb bags	lb.	.03¾	.04½	.03¾	.04½	.03¾	.04½
Powd, 150 lb bags	lb.	.06	.06½	.06	.06½	.06	.06½
Yellow, 150-200 lb bags	lb.	.18	.20	.18	.20	.18	.20
Aloes, Barbadoes	lb.	.85	.90	.85	.90	.....	.....
Animi (Zanzibar) bean & pea 250 lb cases	lb.	.35	.40	.35	.40	.35	.40
Glassy, 250 lb cases	lb.	.50	.55	.50	.55	.50	.55
Arabic, amber sorts	lb.	.08	.08½	.05¾	.08¼	.....	.....
Asphaltum, Barbadoes (Manjak) 200 lb bags	lb.	.03	.06	.03	.05	.04	.06
Egyptian, 200 lb cases	lb.	.13	.15	.13	.15	.13	.15
Ester, light	lb.		.06	....	....	.....	.....
Dark	lb.		.05¾	....	....	.....	.....
Gamboge, pipe, cases	lb.	.60	.65	.42	.65	.....	.....
Powdered, bbls	lb.	.65	.70	.50	.70	.....	.....
Gilsonite Selects, 200 lb bags	ton	30.50	32.90	30.50	32.90	30.50	32.90
Damar Batavia standard 136, lb. cases	lb.	.13	.13½	.08½	.15½	.08½	.09
Batavia Dust, 160 lb bags	lb.	.06½	.07	.04	.07½	.04	.05½
E Seeds, 136 lb cases	lb.	.08	.09	.05½	.09½	.05½	.06½
F Splinters, 136 lb cases and bags	lb.	.05½	.06	.05½	.06	.05½	.06
Singapore, No. 1, 224 lb cases	lb.	.17½	.18	.09½	.18	.10½	11
No. 2, 224 lb cases	lb.	.10½	.11	.07	.11½	.06	.07½
No. 3, 180 lb bags	lb.	.06½	.07	.04½	.07½	.04¼	.05
Benzoin Sumatra, U. S. P. 120 lb. cases	lb.	.21	.23	.17	.23	.18	.22
Copal Congo, 112 lb bags, clean opaque	lb.	.27½	.28	.16½	.28	.16½	.17
Dark, amber	lb.	.09¾	.10½	.06	.10½	.06	.07
Light, amber	lb.	.15	.19	.08	.19	.08	.09
Water, white	lb.	.47	.48	.37	.48	.37	.45
Kino, tins	lb.	.75	.80	....	....	.....	.....
Mastic	lb.	.37½	.40	.26½	.40	.26½	.40
Manila 180-190 lb baskets							
Loba A	lb.	.13¾	.14½	.09	.13½	.09	.11
Loba B	lb.	.12¼	.13½	.08	.13	.08	.08½
Loba C	lb.	.11	.11½	.07	.12	.07	.08
M A Sorts	lb.	.06½	.07	.05	.07	.04¾	.05
D B B Chips	lb.	.08½	.09	.05¾	.09½	.05	.06½
East Indies chips, 180 lb bags	lb.	.04½	.05	.04	.07	.04½	.05½
Pale bold, 224 lb cs	lb.	.16	.17	.05½	.17	.06	.08
Pale nubs, 180 lb bags	lb.	.11	.13	.05	.13	.03½	.05
Pontianak, 224 lb cases							
Bold gen No. 1	lb.	.17½	.18½	.14	.18½	.14	.16
Gen. chips spot	lb.	.07¼	.08	.05	.08	.05	.08
Elemi, No. 1, 80-85 lb cs	lb.	.11	.11½	.09	.12½	.09	.09½
No. 2, 80-85 lb cases	lb.	.10¾	.11¼	.08½	.12	.08½	.09
No. 3, 80-85 lb cases	lb.	.08	.08½	.08	.08½	.08	.08½
Ghatti, sol. bags	lb.	.09	.09½	.06	.09½	.....	.....
Karaya, pow. bbls xxx	lb.	.23	.25	....	....	.....	.....
xx	lb.	.15	.16	....	....	.....	.....
No. 1	lb.	.10	.11	....	....	.....	.....
No. 2	lb.	.08	.09	....	....	.....	.....
Kauri, 224-226 lb cases No. 1	lb.	.20	.25	.20	.25	.20	.42
No. 2 fair pale	lb.	.12½	.16	.12½	.16	.12½	.30
Brown Chips, 224-226 lb. cases	lb.	.06½	.08½	.06½	.12	.10	.12
Bush Chips, 224-226 lb. cases	lb.	.22	.24	.22	.24	.22	.24
Pale Chips, 224-226 lb cases	lb.	.11	.14	.11	.14	.11	.14
Sandarac, prime quality, 200 lb. bags & 300 lb. casks	lb.	.48	.50	.21	.50	.23	.25½
Senegal, picked bags	lb.	.15	.16	....	....	.....	.....
Sorts	lb.	.07½	.08	....	....	.....	.....
Thus, bbls	280 lbs.		8.25	....	....	.....	.....
Strained	280 lbs.		8.25	....	....	.....	.....
Tragacanth, No. 1 bags	lb.		1.00	.65	1.00	.....	.....
Yacca, bags	lb.		.04	....	....	.....	.....
Helium, 1 lit. bot	lit.		25.00	....	25.00	.....	25.00
Hematine crystals, 400 lb bbls	lb.	.16	.18	.10	.18	.10	.18
Paste, 500 bbls	lb.		.11	....	.11	.....	.11
Hemlock 25%, 600 lb bbls wks	lb.	.03½	.04½	.03½	.04½	.03	.04½
Bark	ton		16.00	....	16.00	.....	16.00
Hexalene, 50 gal drs wks	lb.		.30	....	.30	.30	.40
Hexane, normal 60-70° C. Group 3, tanks	gal.		.11	....	....	.....	.....
Hexamethylenetetramine, drs	lb.	.37	.39	....	....	.....	.....
Hoof Meal, f.o.b. Chicago	unit	1.75	1.90	.75	1.75	.75	1.35
South Amer. to arrive	unit	1.55	1.75	1.40	1.75	1.25	1.65

Hydrogen Peroxide
Myrobalans

Prices

		Current Market	1933 Low	1933 High	1932 Low	1932 High
Hydrogen Peroxide, 100 vol, 140 lb cbys	lb.	.20	.20	.21	.20	.21
Hydroxyamine Hydrochloride	lb.		3.15	....	3.15	....
Hypernic, 51°, 600 lb bbls.	lb.	.17	.20	.11	.20	.11
Indigo Madras, bbls.	lb.	1.25	1.30	1.25	1.30	1.25
20% paste, drums	lb.	.15	.18	.15	.18	.15
Synthetic, liquid	lb.		.12	....	.12	....
Iodine, crude	per kilo		15s 1d	....	....	....
Resublimed, kegs	lb.		2.40	2.10	3.40	....
Irish Moss, ord. bales	lb.	.06	.07	....	....	....
Bleached, prime, bales	lb.	.08	.12	....	....	....
Iron Chloride see Ferric or Ferrous						
Nitrate, kegs	lb.	.09	.10	.09	.10	.09
Coml, bbls	100 lb.	2.75	3.25	2.50	3.25	2.50
Oxide, English	lb.	.04½	.07	.04	.07	.04
Japan Wax, 224 lb cases	lb.	.07¾	.08	.05½	.08	.06
Keiselguhr, 95 lb bgs NY						
Brown	ton	60.00	70.00	60.00	70.00	60.00
Lead Acetate, bbls wks	100 lb.		9.50	8.50	9.50	9.00
White crystals, 500 lb bbls wks	100 lb.		10.50	9.50	10.50	10.00
Arsenate, drs 1c-1 wks	lb.	.10	.10½	.09	.10½	.09½
Dithiofuroate, 100 lb dr	lb.		1.00	....	1.00	....
Linoleate, solid bbls	lb.	.26	.26½	....	....	....
Metal, c-l NY	100 lb.		4.15	3.00	4.50	2.70
Nitrate, 500 lb bbls wks	lb.	.10	.14	.10	.14	.10½
Oleate, bbls	lb.	.15	.16	.15	.16	.15
Lead Oxide Litharge, 500 lb bbls	lb.		.06¾	.05½	.07	.05½
Red, 500 lb bbls wks	lb.		.07¾	.06½	.08	.06¾
Resinate, precip., bbls	lb.	.18	.18½	....	....	....
Stearate, bbls	lb.	.22	.23	....	....	....
White, 500 lb bbls wks	lb.	.06½	.07	.06	.07	.06
Sulfate, 500 lb bbls wk	lb.		.06	.05½	.06	.05½
Leuna saltpetre, bags c.i.f.	ton		Nom.	....	Nom.	....
S. points c.i.f.	ton		Nom.	....	Nom.	....
Lime, ground stone bags	ton		4.50	....	4.50	....
Live, 325 lb bbls wks	bbl.		1.70	....	....	....
Lime Salts, see Calcium Salts						
Lime-Sulfur soln bbls	gal.	.15	.17	.15	.17	.15
Linseed cake, bulk	ton	24.50	25.00	17.50	27.50	....
Linseed Meal	ton		37.00	28.00	37.00	....
Lithopone, 400 lb bbls 1c-1 wks	lb.	.04¾	.05	.04¾	.05	.04¼
Logwood, 51°, 600 lb bbls	lb.	.08½	.12½	.05	.12½	.05
Solid, 50 lb boxes	lb.	.13½	.17½	.08	.17½	.08
Sticks	ton	24.00	26.00	24.00	26.00	24.00
Madder, Dutch	lb.	.22	.25	.22	.25	.22
Magnesite, calc, 500 lb bbl	ton	60.00	65.00	46.00	65.00	50.00
Magnesium Carb, tech, 70 lb bags NY	lb.		.06½	.05¾	.06½	.05¾
Chloride flake, 375 lb. drs c-l wks	ton	34.00	36.00	34.00	36.00	35.00
Imported shipment	ton	31.75	33.00	31.75	33.00	31.75
Fused, imp., 900 lb bbls NY	ton		31.00	....	31.00	....
Fluosilicate, crys, 400 lb bbls. wks	lb.	.10	.10½	.10	.10½	.10
Oxide, USP, light, 100 lb bbls.	lb.		.42	....	.42	....
Heavy, 250 lb bbls	lb.		.50	....	.50	....
Palmitate, bbls	lb.	.21	.22	....	....	....
Peroxide, 100 lb cs	lb.	1.20	1.25	1.00	1.25	1.00
Silicofluoride, bbls	lb.	.10	.11	.08¾	.11	.09¼
Stearate, bbls	lb.	.19	.20	.16½	.20	.16½
Manganese Borate, 30%, 200 lb. bbls	lb.	.15	.16	.15	.16	.15
Chloride, 600 lb casks	lb.	.07	.08	.07	.08	.07
Dioxide, tech (peroxide) drs	lb.	.03¾	.06	.03½	.06	.03½
Linoleate, lig. drums	lb.	.18	.19	....	....	....
Resinate, fused, bbls	lb.	.08¼	.08½	....	....	....
precip., bbls	lb.	.11½	.12½	....	....	....
Sulfate, 550 lb drs NY	lb.		.08	.07	.08	.07
Mangrove 55%, 400 lb bbls	lb.		.04	....	.04	....
Bark, African	ton	30.00	31.00	22.00	31.00	21.00
Marble Flour, bulk	ton	12.00	13.00	12.00	13.00	12.00
Mercuric chloride	lb.	.82	.87	.67	.87	.67
Mercury metal .....76 lb flask		66.50	69.00	48.00	69.00	47.00
Meta-nitro-aniline	lb.	.67	.69	.67	.69	.67
Meta-nitro-para-toluidine 200 lb. bbls	lb.	1.40	1.55	1.40	1.55	1.40
Meta-phenylene-diamine 300 lb. bbls	lb.	.80	.84	.80	.84	.80
Meta-toluene-diamine, 300 lb. bbls	lb.	.67	.69	.67	.69	.67
Methanol, (Wood Alcohol)						
*Crude, tanks	gal.		.20	.20	.20	....
95% tanks	gal.	.33	.35	.33	.35	.33
97% tanks	gal.	.34	.39	.34	.39	.34
*Pure, Synthetic drums cars	gal.		.40	.37½	.40	.37½
*Synthetic tanks	gal.		.35½	....	.35½	....
*Denat. grade, tanks	gal.		.40	.35	.40	....
Methyl Acetate drums 82%	gal.	.12	.13	.12	.13	.12
99%	gal.		.15	....	.15	....
Acetone, drums	gal.	.54½	.57	.42	.57	.47
Hexyl Ketone, pure	lb.		1.20	....	1.20	....
Anthraquinone	lb.	.65	.67	.65	.67	.65
Cellosolve, (See Ethylene Glycol Mono Methyl Ether)						
Chloride, 90 lb cyl.	lb.	.45	.45	.45	.45	.45
Mica, dry grd. bags wks	lb.	65.00	80.00	65.00	80.00	65.00
Michler's Ketone, kegs	lb.		2.50	2.50	3.00	....
Molasses, blackstrap, tanks f.o.b. N. Y.	gal.	.06½	.07	.04½	.07	....
Monochlorobenzene, drums see, Chlorobenzene, mono	lb.					
Monomethylparaminosulfate 100 lb drums	lb.	3.75	4.00	3.75	4.00	3.75
Montan Wax, crude, bags	lb.		.10	.03¾	.10	.03¾
Myrobalans 20%, liq bbls	lb.	.03¾	.04¼	.03½	.04¼	.03½
50% Solid, 50 lb boxes	lb.	.06	.06¼	.05	.06¼	.05

*delivered basis (east of Miss. River) †As of Sept. 1, $2.56.

	Current Market	1933 Low	1933 High	1932 Low	1932 High
J1 bags.....ton		32.00	27.00	35.00	34.00	35.00
J2 bags.....ton		18.50	15.50	22.75	15.25	18.50
R2 bags.....ton		18.00	15.00	22.00	14.75	17.50
Naphtha, v.m.& p. (deodorized) tanks, Group 3 tanks...gal.	.06⅝	.07⅛	....	....	....	....
Bayonne, tanks.....lb.		.09½	.08½	09½	.08½	.10
Naphthalene balls, 250 lb bbls wks.....lb.	.06	.07	.05½	.07	.03¾	05½
Crude, imp.....100 lb.		2.15	1.75	2.15	....	....
Crushed, chipped bgs wks...lb.		.05	....	.05	....	.04½
Flakes, 175 lb bbls wks.....lb.		.07¼	....	.07¼	.03¾	.04¾
Nickel Chloride, bbls.....lb.	.18	.19	.17	.19	.18	20
Oxide, 100 lb kegs NY.....lb.	.35	.37	.35	.37	.35	40
Salt bbl. 400 bbls lb NY...lb.	.11½	.12	.11	.13	.10½	13
Single, 400 lb bbls NY.....lb.	.11½	.12	.11	.12	.10½	.12
Metal ingot.....lb.	.35	.35	.35	.35	.35	35
Nicotine, free 40%, 8 lb tins, cases.....	8.25	10.15	....	....	....	....
Sulfate, 55 lb. drums.....lb.	.67	.75	.67	.75	.74½	....
Nitre Cake, bulk.....ton	12.00	14.00	10.00	14.00	10.00	12.00
Nitrobenzene, redistilled, 1000 lb drs wks*.....lb.	.08½	.11	.08½	.11	.09	.11
Nitrocellulose, c-l-l-cl, wks....lb.	.27	.33	.27	.33	.25	.36
Nitrogenous Material, bulk, unit	2.40	2.50	1.50	3.50	1.35	1.55
Nitronaphthalene, 550 lb bbls lb.	.24	.25	.24	.25	....	25
Nutgalls Aleppy, bags.....lb.		.18	....	.18	....	.18
Chinese, bags.....lb.	.17	.18	.17	.18	17	.18
Oak Bark, ground.....ton	30.00	35.00	30.00	35.00	30.00	35.00
Whole.....ton	20.00	23.00	20.00	23.00	20.00	23.00
Extract, 25% tannin, bbls..lb.	.03¾	.03½	....	....	....	....
Orange-Mineral, 1100 lb casks NY.....lb.		.10½	09½	.10¼	09½	.10¼
Orthoaminophenol, 50 lb kgs..lb	2.15	2.25	2.15	2.25	2.15	2.25
Orthoanisidine, 100 lb drs....lb.	1.00	1.15	1.00	1.15	1.15	1.50
Orthochlorophenol, drums....lb.	.50	.65	.50	.65	50	.65
Orthocresol, drums.....lb.	.13	.15	.13	.15	.13	.22
Orthodichlorobenzene, 1000 lb. drums.....lb.	.05½	.06	05½	.06	07	.10
Orthonitrochlorobenzene, 1200 lb drs wks.....lb.	.28	29	.28	.29	28	29
Orthonitrotoluene, 1000 lb drs wk.....lb.	.05½	.06	.05½	.06	.14	.18
Orthonitrophenol, 350 lb dr..lb.	.52	.80	.52	.90	85	90
Orthotoluidine, 350 lb bbl lc-l lb.	.14	.15	.14	.22	.20	22
Orthonitroparachlorphenol, tins .....lb.	.70	.75	.70	.75	.70	.75
Osage Orange, crystals.....lb.	.16	.17	.16	.17	.16	.17
51 deg. liquid .....lb.	.07	.07¼	.06	.07¼	.06	.07½
Powdered. 100 lb bags.....lb.	.14½	.15	.14½	.15	14½	.15
Paraffin, refd, 200 lb cs slabs 123-127 deg. M. P.....lb.	.04½	.04½	.02	.04½	.02½	.03
128-132 deg. M. P.....lb.		.04¾	.03½	.04¾	....	.03½
133-137 deg. M. P.....lb.		.05½	.043	.05½	.04	.04½
Para Aldehyde, 110-55 gal drs.lb.	.20½	.23	.20½	.23	.20½	.23
Aminoacetanilid, 100 lb bg..lb.	.52	.60	.52	.60	.52	.60
Aminohydrochloride, 100 lb. kegs.....lb.	1.25	1.30	1.25	1.30	1.25	1.30
Aminophenol, 100 lb kegs...lb.	.78	.80	.78	.80	.78	80
Chlorophenol, drums.....lb.	.50	.65	.50	.65	.50	.65
Coumarone, 330 lb drums..lb.		....	....	....	....	....
Cymene, refd, 110 gal dr..gal.	2.25	2.50	2.25	2.50	2.25	2.50
Dichlorobenzene, 150 lb bbls wks.....lb.	.16	.18	.15	.18	.15½	.16
Nitroacetanilid, 300 lb bbls lb.	.45	.52	.45	.52	.45	.52
Nitroaniline, 300 lb bbls wks .....lb.	.48	.55	.48	.55	.48	.55
Nitrochlorobenzene, 1200 lb drs wks.....lb.	.23½	.24	.23½	.26	.23	.26
Nitro-orthotoluidine, 300 lb. bbls.....lb.	2.75	2.85	2.75	2.85	2.75	2.85
Nitrophenol 185 lb bbls....lb.	.45	.50	.45	.50	45	.50
Nitrosodimethylaniline, 120 lb. bbls.....lb.	.92	.94	.92	.94	.92	.94
Nitrotoluene, 350 lb bbls...lb.	.35	.37	.29	.37	.29	.31
Phenylenediamine, 350 lb bbls .....lb.	1.25	1.30	1.15	1.30	1.15	1.20
Toluenesulfonamide, 175 lb bbls.....lb.	.70	.75	.70	.75	.70	.75
Toluenesulfonchloride, 410 lb bbls wks.....lb.	.20	.22	.20	.22	.20	22
Toluidine, 350 lb bbls wk..lb.	.56	.60	.56	.60	.42	43
Paris Green, Arsenic Basis 100 lb kegs.....lb.		.24	....	.24	.24	27
250 lb kegs.....lb.		23	....	.23	.23	.25
Persian Berry Ext., bbls.....lb.	.25	Nom	.25	Nom	.25	Nom.
Pentane, normal, 28-38° C, group 3, tanks.....gal.		.07	....	....	....	....
Pentasol (see Alcohol, Amyl)...						
Pentasol Acetate (see Amyl Acetate).....lb.						
Petrolatum, Green, 300 lb bbl. lb.	.01⅞	.02	.01⅞	.02	.02	.02⅛
Petroleum Ethers, tanks 30-60°, Group 3.....gal.		.11	.10	.11	....	....
Petroleum solvents and diluents Cleaners' naphtha, Group 3, tanks.....gal.	.06⅞	.07⅛	.05	.07⅜	....	....
Lacquer diluents, Bayonne tanks.....gal.	.12	.12½	.12	.12¾	....	....
Group 3, tanks.....gal.	.07⅛	.08⅛	.06¼	.08⅜	....	....
Petroleum thinner 47-49 deg. tanks, Group 3.....gal.	.05⅞	.06¼	....	....	....	....
Rubber solvent, stand. grade tanks, Group 3.....gal.		.06⅞	.05	.06⅞	....	....
East Coast tanks.....gal.		.09½	.09	.09½	....	....
Stoddard solvents 48-50 deg. tanks, Group 3.....gal.	.06⅜	.06⅜	.04½	.06⅜	....	....
East Coast tanks.....gal.		.09½	.09	.09½	....	....
Phenol, 250-100 lb drums....lb.	.14½	.15	.14½	.15	14½	.15
Phenyl-Alpha-Naphthylamine, 100 lb kegs.....lb.		1.35	....	1.35	....	1.35

*Higher price is for lcl quantities.

Phenyl Chloride
Rosin

Prices

	Current Market	1933 Low	1933 High	1932 Low	1932 High
Phenyl Chloride, drums.....lb.....		.16	....	....	.....
Phenylhydrazine Hydrochloride .....lb.	2.90	3.00	2.90	3.00	2.90	3.00
Phosphate Acid (see Superphosphate)						
Phosphate Rock, f.o.b. mines						
Florida Pebble, 68% basis..ton	2.85	3.20*	2.75	3.25	3.10	3.25
70% basis.....ton	3.35	3.70*	3.25	3.90	3.75	3.90
72% basis.....ton	3.85	4.20*	3.75	4.35	4.25	4.35
75-74% basis.....ton	4.90	5.30*	4.75	5.50	5.25	5.50
75% basis.....ton	5.05	5.40*	4.85	5.75	.....	5.75
77-80% basis.....ton	5.90	6.20*	5.75	6.30	.....	6.25
Tennessee, 72% basis.....ton.....		5.00*	....	5.00	.....	5.00
Phosphorous Oxychloride 175 lb cyl.....lb.	.16	.20	.16	.23	.18	.20
Red, 110 lb cases.....lb.....		.45	.40	.45	.40	.46
Yellow, 110 lb cases wks.lb.	.28	.33	.27½	.33	.27½	.37½
Sesquisulfide, 100 lb cs.....lb.	.38	.44	.38	.44	.38	.44
Trichloride, cylinders.....lb.	.16	.20	.16	.23	.18	.20
Phthalic Anhydride, 100 lb bbls wks.....lb.	.14½	.15	.13½	.16	.15	.16
Pigments Metallic, Red or brown bags, bbls, Pa. wks.....ton	37.00	45.00	37.00	45.00	37.00	45.00
Pine Oil, 55 gal drums or bbls						
Destructive dist.....lb.	.59	.62	.59	.62	.59	.63
Prime bbls.....bbl.	8.00	10.60	8.00	10.60	8.00	10.60
Steam dist. bbls.....gal.....		.59	.52	.59	.54	.61
Pitch Hardwood..... wks.....ton.....		20.00	20.00	25.00	20.00	35.00
Plaster Paris, tech, 250 lb bbls .....bbl.	3.40	3.50	3.30	3.50	3.30	3.50
Platinum, Refined.....oz.	37.00	38.00	24.00	38.00	32.00	38.00
Pontol, tanks .....per gal.....		.54	....	.54	.54	.54
Potash, Caustic, wks, solid...lb.	.07½	07¾	.06½	.07¾	.06½	.06½
flake.....lb.	.0803	.08½	.0705	.08¼	.0705	.08
Liquid, tanks .....lb.....		.03½	....	....	.....	.....
Potash Salts, Rough Kainit 12.4% basis bulk.....ton.....		9.20	....	9.20	.....	9.20
14% basis.....ton.....		9.70	....	9.70	.....	9.70
Manure Salts.....						
20% basis bulk.....ton.....		12.00	....	12.00	12.00	12.65
30% basis bulk.....ton.....		19.15	....	19.15	.....	19.15
Potassium Acetate.....lb.	.27	.28	.27	.28	.27	.28
Potassium Muriate, 80% basis bags.....ton.....		37.15	....	37.15	.....	37.15
Pot. & Mag. Sulfate, 48% basis bags.....ton.....		25.00	25.00	27.80	.....	27.80
Potassium Sulfate, 90% basis bags.....ton.		42.15	42.15	47.50	47.50	48.25
Potassium Bicarbonate, USP, 320 lb bbls.....lb.	.07½	.09	.07½	.09	.07½	.09
Bichromate Crystals, 725 lb casks.....lb.	.08½	.08½	.07½	.08½	.07	.08½
Binoxalate, 300 lb bbls.....lb.	.14	.17	.14	.17	.14	.17
Bisulfate, 100 lb kegs.....lb.	.16	.30	.16	.30	.16	.30
Carbonate, 80-85% calc. 800 lb casks.....lb.	.07	.07½	.04½	.07½	.0475	.05
Chlorate crystals, powder 112 lb keg wks.....lb.	.08½	.09	.08	.09	.08	.08½
Chloride, crys bbls.....lb.	.04	.04½	.04	.04½	.04	.04½
Chromate, kegs.....lb.	.23	.28	.23	.28	.23	.28
Cyanide, 110 lb. cases.....lb.	.55	.60	.50	.60	.50	.57½
Iodide, 75 lb. bbls.....lb.....		2.70	2.35	2.70	.....	.....
Metabisulfite, 300 lb. bbl...lb.	.10½	.11	.10½	.11	.10½	.13
Oxalate, bbls.....lb.	.16	.24	.16	.24	.16	.24
Perchlorate, casks wks.....lb.	.09	.11	.09	.11	.09	.11
Permanganate, USP, crys 500 & 100 lb drs wks.....lb.....		.17½	.16	.17½	.16	.16½
Prussiate, red, 112 lb keg..lb.....		.35	.32½	.38½	.....	.38½
Yellow, 500 lb casks.....lb.	.18	.19	.16½	.19	.16½	.21
Tartrate Neut, 100 lb keg...lb.....		.21	....	.21	.....	.21
Titanium Oxalate, 200 lb bbls .....lb.	.32	.35	....	....	.....	.....
Propane, group 3, tanks.....		.07	....	.07	.....	.....
Pumice Stone, lump bags.....lb.	.04½	.06	.04	.06	.04	.05
250 lb bbls.....lb.	.05	.07	.04½	.07	.04½	.06
Powdered, 350 lb bags.....lb.	.02½	.03	.02½	.03	.02½	.03
Putty, commercial, tubs..100 lb.....		2.25	2.00	2.25	2.00	2.45
Linseed Oil, kegs.....100 lb.	4.00	4.50	3.40	4.50	3.40	4.75
Pyridine, 50 gal drums .....gal.....		1.25	.85	1.25	.85	1.25
Pyrites, Spanish cif Atlantic ports bulk.....unit	.12	.13	.12	.13	.12	.13
Quebracho, 35% liquid tks...lb.....		.02½	.02	.02½	.02	.03
450 lb bbls c-l .....lb.....		.02½	.02½	.02½	.02½	.03½
Solid, 63%, 100 lb bales cif..lb.....		.03½	.02½	.03½	.02	.02½
Clarified, 64%, bales... lb.....		.03½	.02½	.03½	.02½	.03½
Quercitron, 51 deg liquid 450 lb bbls .....lb.	.05½	.06	.05½	.06	.05½	.06
Solid, 100 lb boxes.....lb.	.09½	.13	.09½	.13	.09½	.13
Bark, Rough.....ton.....		14.00	....	14.00	.....	14.00
Ground.....ton	34.00	35.00	34.00	35.00	34.00	35.00
R Salt, 250 lb bbls wks.....lb.	.40	.44	.40	.44	.40	.44
Red Sanders Wood, grd bbls. lb.....		.18	....	.18	.....	.18
Resorcinol Tech, cans.....lb.	.65	.70	.65	.70	.65	.70
Rochelle Salt, cryst.....lb.....		.12½	....	....	.....	.....
Rosin Oil, 50 gal bbls, first run .....gal.	.45	.46	.42	.46	.41	.45
Second run.....gal.	.50	.51	.46	.51	.45	.51
Rosin						
Rosins 600 lb bbls 280 lb.....unit ex. yard N. Y.						
B.....		4.50	2.75	5.15	2.95	3.65
D.....		4.60	2.95	5.15	3.15	3.75
E.....		4.80	3.55	5.15	3.37½	4.00
F.....		5.00	3.85	5.17½	3.40	4.15
G.....		5.05	3.90	5.17½	3.45	4.15
H.....		5.10	4.00	5.17½	3.45	4.20
I.....		5.15	4.05	5.20	3.47½	4.25
K.....		5.30	4.60	5.20	3.60	4.65
M.....		5.50	4.35	5.25	4.20	5.25
N.....		5.50	4.75	5.40	4.65	6.05

*Higher prices run to Jan.-June 1935.

Current

Rosin
Starch, Potato

	Current Market	1933 Low	1933 High	1932 Low	1932 High
Rosin, WG	5.55	4.80	5.60	5.25	6.45
WW	5.90	4.85	6.20	5.85	6.65
Rotten Stone, bags mines....ton	23.50	24.00	23.50	24.00	20.00	23.00
Lump, imported, bbls.....lb.	.05	.07	.05	.07	.05	.07
Selected bbls.....lb.	.09	.12	.09	.12	.09	.12
Powdered, bbls.....lb.	.02½	.05	.02	.05	.02	.05
Sago Flour, 150 lb bags.....lb.	.02½	.03	.02½	.03	.02½	.04
Sal Soda, bbls wks.....100 lb.	1.10	1.10	.90	1.10	.90	1.00
Salt Cake, 94-96% c-l wks...ton	13.00	18.00	13.00	18.00	13.00	15.50
Chrome.....ton	12.00	13.00	12.00	13.00	12.00	14.50
Saltpetre, double refd granular 450-500 lb bbls.....lb.		.06	.05¾	.06½	.06	.06½
Satin, White, 500 lb bbls.....lb.		.01½	....	.01½	.....	.01½
Shellac Bone dry bbls.....lb.	.26	.28	.18	.28	.16	.26
Garnet, bags.....lb.	.16	.17	.15	.20	.15	.20
Superfine, bags.....lb.	.16	.16½	.09½	.18½	.10	.14
T. N. bags.....lb.	.15	.15½	.08½	.17½	.09	.13
Schaeffer's Salt kegs.....lb.	.48	.50	.48	.50	.48	.50
Silica, Crude, bulk mines....ton	8.00	11.00	8.00	11.00	8.00	11.00
Refined, floated bags.....ton	22.00	30.00	22.00	30.00	22.00	30.00
Air floated bags.....ton		32.00	....	32.00	.....	32.00
Extra floated bags.....ton	30.00	35.00	30.00	35.00	30.00	40.00
Silver Nitrate, vials.....oz.		.31½	....	....	.....	.....
Soapstone, Powdered, bags f.o.b. mines.....ton	15.00	22.00	15.00	22.00	15.00	22.00
Soda Ash, 58% dense, bags c-l wks.....100 lb.		1.25	1.17½	1.25	1.17½	.....
58% light, bags.....100 lb.		1.23	1.15	1.23	1.15	1.20
Soda Caustic, 76% grnd & flake drums.....100 lb.		3.00	2.90	3.00	2.90	3.00
76% solid drs.....100 lb.		2.60	2.50	2.60	2.50	2.55
Liquid sellers tanks, 100 bls.		2.25	2.15	2.25	.....	.....
Sodium Abietate, drs.....lb.		.03	....	.03	.....	.03
Acetate, tech 450 lb. bbls wks lb.	.04½	.05	.04½	.05	.04½	.05
Alignate, drs.....lb.		.50	....	.50	.....	.50
Arsenate, drums.....lb.	.07½	.08½	.07½	.08½	.....	.....
Arsenite, drums.....gal.	.50	.75	.05	.75	.50	.75
Benzoate U.S.P., kegs.....lb.	.45	.47	....	....	.....	.....
Bicarb, 400 lb bbl.....100 lb.		2.25	....	2.25	.....	2.25
Bichromate, 500 lb cks wks lb.	.06½	.06½	.044	.07	.044	.05½
Bisulfite, 500 lb bbl wks....lb.	.03	.0335	.02½	.0335	.03	.04
Chlorate, wks.....lb.	.05½	.07½	.05½	.07½	.05½	.07½
Chloride, technical.....ton	11.40	14.00	11.40	14.00	12.00	13.00
Cyanide, 96-98%, 100 & 250 lb drums wks.....lb.	.15½	.16	.15½	.16	.15½	.17
Fluoride, 300 lb bbls wks....lb.		.07½	.07	.07½	.07	.07½
Hydrosulfite, 200 lb bbls f.o.b. wks.....lb.	.20	.21	.20	.21	.21	.24
Hypochloride solution, 100 lb. cbys.....lb.		.05	....	.05	.....	.05
Hyposulfite, tech, pea cyrs 375 lb bbls wks.....100 lb.	2.40	3.00	2.40	3.00	2.40	3.00
Technical, regular crystals 375 lb bbls wks....100 lb.	2.40	2.65	2.40	2.65	2.40	2.65
Iodide.....lb.		3.50	3.10	3.50	.....	.....
Metanilate, 150 lb bbls....lb.	.44	.45	.44	.45	.44	.45
Metasilicate, c-l, wks..100 lb.	2.65	3.05	2.65	3.25	2.85	4.00
Monohydrate, bbls.....lb.		.02½	....	.02½	.....	.02½
Naphthionate, 300 lb bbl...lb.	.52	.54	.52	.54	.52	.54
Nitrate, 92%, crude, 200 lb. bags c-l NY .....100 lb.		1.31½	1.26	1.31½	1.185	1.73½
100 lb. bags lb.....ton		27.00	....	....	.....	.....
Bulk.....ton		24.50	....	....	.....	.....
Nitrite, 500 lb bbls spot....lb.	.07½	.08	.07½	.08	.07½	.08
Orthochlorotoluene, sulfonate, 175 lb bbls wks.....lb.	.25	.27	.25	.27	.25	.27
Perborate, 275 lb bbls.....lb	.17	.19	.17	.19	.17	.20
Peroxide, bbls. 400 lb.....lb.		.17	....	....	.....	.....
Phosphate, di-sodium, tech. 310 lb bbls.....100 lb.	2.20	2.40	2.00	2.40	2.00	2.75
tri-sodium, tech, 325 lb bbls.....100 lb.		2.60	2.15	2.50	2.15	3.20
Picramate, 160 lb kegs ....lb.	.69	.72	.69	.72	.69	.72
Prussiate, Yellow, 350 lb bbl wks.....lb.	.11½	.12	.11½	.12	.11½	.12
Pyrophosphate, 100 lb keg..lb.	.15	.20	.15	.20	.15	.20
Silicate, 60 deg 55 gal drs, wks .....100 lb.	1.65	1.70	1.65	1.70	1.65	1.70
40 deg 55 gal drs, wks .....100 lb.		.80*	.75	.80	.....	.75
Silicofluoride, 450 lb bbls NY .....lb.	.05	.06	.04½	.06	.05½	.06½
Stannate, 100 lb drums.....lb.	.35	.37	.18	.37	.17	.19
Stearate, bbls.....lb.	.20	.25	.20	.25	.20	.25
Sulfanilate, 400 lb bbls.....lb.	.16	.18	.16	.18	.16	.18
Sulfate Anhyd, 550 lb bbls c-l wks.....lb.	.022	.0285	.02	.0285	.02	.02¾
Sulfide, 80% crystals, 440 lb bbls wks.....lb.	.02½	.02¾	.02½	.02¾	.02½	.02¾
62% solid, 650 lb drums 1c-1 wks.....lb.	.03	.03¼	.03	.03¼	.03	.03¼
Sulfite, crystals, 400 lb bbls wks.....lb.	.03	.03¼	.03	.03¼	.03	.03¼
Sulfocyanide, bbls .....lb.	.28	.35	.28	.35	.28	.35
Tungstate, tech, crystals, kegs .....lb.	.65	.67	.57	.67	.60	.88
Spermaceti, blocks, cases.....lb.	.18	.19	.17	.22	.....	.....
Cakes, cases.....lb.	.19	.20	.18	.23	.....	.....
Spruce Extract, ord., tanks..lb.		.01	.00¾	.01	.00¾	.01
Ordinary, bbls.....lb.		.01½	.01½	.01½	.01½	.01⅝
Super spruce ext., tanks...lb.		.01⅝	.01½	.01⅝	.01½	.01⅝
Super spruce ext., bbls....lb.		.01¾	.01⅝	.01¾	.01⅝	.01¾
Super spruce ext. powd., bags .....lb.		.04	....	.04	.04	.04½
Starch, powd, 140 lb bags .....100 lb.	2.81	3.01	2.29	3.01	2.29	2.67
Pearl, 140 lb bags.....100 lb.	2.71	2.91	2.19	2.91	2.19	2.84
Potato, 200 lb bags.....lb.	.05½	.06	.03¾	.06	.03¾	.06
Imported bags.....lb.	.06	.06½	.04¾	.06½	.04	.06½

*Tanks, 15c less.

Starch, Potato
Zinc Dithiofuroate

Prices

	Current Market	1933 Low	1933 High	1932 Low	1932 High
Starch, Potato Soluble ....lb.	.08	.08½	.08	.08½	08 08½
Rice, 200 lb bbls....lb	.07½	.08½	.07	.08½	07½ .10
Wheat, thick bags....lb	.06½	.06¾	.05¾	.06¾	06 .07
Thin bags....lb	.10	.10½	.09½	.10½	.09½ .10
Strontium carbonate, 600 lb bbls wks....lb	.07½	.07½	.07½	.07½	07½ 07½
Nitrate, 600 lb bbls NY...lb.	.10½	.11	.07	.11	07 07½
Peroxide, 100 lb drs....lb....		1.25	....	1.25	.. 1.25
Sulfur Brimstone, broken rock. 250 lb bag c-1....100 lb....		2.05	....	2.05	.... 2.05
Crude, f. o. b. mines....ton	18.00	19.00	18.00	19.00	18.00 19.00
Flour for dusting 99½%, 100 lb bags c-1 NY....100 lb		2.40	....	2.40	..... 2.40
Heavy bags c-1....100 lb....		2.50	....	2.50	..... 2.50
Flowers, 100%, 155 lb bbls c-1 NY....100 lb....		3.45	....	3.45	... 3.45
Roll, bbls 1c-1 NY....100 lb.	2.65	2.85	2.65	2.85	2.65 2.85
Sulfur Chloride, red, 700 lb drs wks....lb.	.05	.05½	05	.05½	05 .05½
Yellow, 700 lb drs wks....lb.	.03½	.04½	.03½	.04½	.03½ .04½
Sulfur Dioxide, 150 lb cyl....lb.	.07	.08	.07	.08	.07 07½
Extra, dry, 100 lb cyl....lb	.11	.13	.10	.13	.10 12
Sulfuryl Chloride....lb.	.15	.40	15	.40	.15 .40
Sumac, Italian, ground....ton	70.00	75.00	50.00	75.00	....
Talc, Crude, 100 lb bgs NY..ton	12.00	15.00	12.00	15.00	12.00 15.00
Refined, 100 lb bgs NY..ton	16.00	18.00	16.00	18.00	16.00 18.00
French, 220 lb bags NY....ton	27.50	30.00	18.00	30.00	18.00 22.00
Refined, white, bags....ton	45.00	60.00	35.00	60.00	35.00 40.00
Italian, 220 lb bags to arr..ton	70.00	75.00	48.50	75.00	40.00 50.00
Refined, white bags N.Y.ton	75.00	80.00	50.00	80.00	50.00 55.00
Superphosphate, 16% bulk, wks....ton....		8.00	6.50	8.00	7.00 8.00
Run of pile....ton....		7.50	6.00	7.50	....
Tankage Ground NY....unit....		2.50*	1.70	2.75*	1.30 1.50
Ground....unit....		2.35	2.35	2.60	....
High grade f.o.b. Chicago.unit....		2.00*	1.40	3.00	1.00 1.80
South American cif....unit....		3.00*	....	2.50	1.80 2.25
Tapioca Flour, high grade bgs.lb	.03	.05	.03	.05	.03½ .05
Medium grade, bags....lb.	.03	.04	.03	.04	03 04
Tar Acid Oil, 15%, drums...gal	.21	.22	.20	.22	.21 .22
25% drums....gal.	.23	.24	.22	.24	.23 .24
Tartar Emetic, Tech....gal....		.21¼	....	....	....
U. S. P....gal....		.27	....	....	....
Terra Alba Amer. No. 1, bgs or bbls mills....100 lb.	1.15	1.75	1.15	1.75	1.15 1.75
No. 2 bags or bbls...100 lb.	1.00	1.25	1.00	1.25	1.50 2.00
Imported bags....lb.	.01½	.01½	.01½	.01½	.01½ 01½
Tetrachlorethane, 50 gal dr...lb.	.08½	.09	.08½	.09	.08 .09½
Tetralene, 50 gal drs wks....lb.	.12	.13	.12	.13	.12 .20
Thiocarbanilid, 170 lb bbl....lb.	.25	.28½	.25	.28½	.25 .28½
Tin....					
Crystals, 500 lb bbls wks...lb.	.38½	.39	.24	.41	.22 .25
Metal Straits NY....lb....		.52½	.23	.57	.211 .24½
Oxide, 300 lb bbls wks....lb.	.57	.59	.27½	.59	.23 .26½
Tetrachloride, 100 lb drs wks ....lb.	.26	.27	.126	.28	.1420 .1457
Titanium Dioxide 300 lb bbl..lb.	.17½	.19½	.17½	.19½	.17½ .21
Calcium Pigment, bbls....lb.	.06¼	.06¼	.06¼	.06½	.06¼ .07½
Toluene, 110 gal drs....gal....		.35	....	.35	..... .35
8000 gal tank cars wks....gal....		.30	....	.30	..... .30
Toluidine, 350 lb bbls....lb.	.88	.89	.88	.89	.88 .89
Mixed, 900 lb drs wks....lb.	.27	.28	.27	.28	.27 .32
Toner Lithol, red, bbls....lb.	.80	.85	.80	.95	.90 .95
Para, red, bbls....lb....		.80	....	.80	..... .80
Toluidine....lb....		1.35	1.35	1.55	1.50 1.55
Triacetin, 50 gal drs wks....lb.	.32	.36	.32	.36	.32 .36
Trichlorethylene, 50 gal dr...lb.	.09½	.10	.09½	.10	.10 .10½
Triethanolamine, 50 gal drs...lb.	.35	.38	.35	.38	.35 .42
Tricresyl Phosphate, drs....lb.	.19	.26	.19	.26	.21 .26
Triphenyl guanidine....lb.	.58	.60	.58	.60	.58 .60
Phosphate, drums....lb.	.37	.39	.37	.39	.50 .65
Tripoli, 500 lb bbls....100 lb.	.75	2.00	.75	2.00	.75 2.00
Tungsten. Wolframite..per unit.	12.00	12.50	10.00	12.50	10.00 11 75
Turpentine carlots, N. Y. dock bbls....gal....		.47¾	.46½	.51½	.39 .47¾
Savannah, bbls....gal....		.42¾	....	....	....
Jacksonville, bbls....gal....		.43	....	....	....
Wood Steam dist, bbls.... N. Y....gal....		.44	.42	.48	.42 .46
Urea, pure, 112 lb cases....lb.	.15	.17	.15	.17	.15 17
Fert. grade, bags c.i.f....ton....		90.00	82.60	90.00	.... 82.60
c. i. f. S. points....ton....		90.00	82.60	90.00	..... 82.60
Urea Ammonia liq. 55% NH_3, tanks....unit....		.96	....	....	....
Valonia Beard, 42%, tannin bags....ton....		40.00	27.50	42.00	28.50 34.00
Cups, 30-31% tannin....ton....		25.00	17.00	25.00	19.00 23.50
Mixture, bark, bags....ton....		28.00	22.00	28.00	22.00 26.00
Vermillion, English, kegs....lb.	1.41	1.42	1.05	1.42	1.28 1.80
Vinyl Chloride, 16 lb cyl....lb....		1.00	....	1.00	..... 1.00
Wattle Bark, bags....ton....		34.00	24.00	32.00	26.00 33.00
Extract 55%, tanks, bbls...lb....		.05½	.03	.05½	.03 .06½
Whiting, 200 lb bags, c-1 wks ....100 lb.	.85	1.00	.85	1.00	.85 1.00
Alba, bags c-1 NY....ton....		15.00	13.00	15.00	..... 13.00
Gilders, bags c-1 NY...100 lb....		1.35	....	1.35	..... 1.35
Wood Flour, c-1....bags	18.00†	30.00	18.00	36.00	....
Xylene, 10 deg tanks wks...gal....		.29	.29	.29	..... .29
Commercial, tanks wks...gal....		.26	....	.26	.... .26
Xylidine, crude....lb.	.36	.37	.36	.37	36 .37
Zinc Ammonium Chloride powd., 400 lb bbls....lb.	.04¾	.05	.04¾	.05	..... 5.75
Carbonate Tech. bbls NY..lb.	.09½	.11	.09½	.11	.09½ .11
Chloride Fused, 600 lb drs wks....lb.	.05	.05¾	.05	.05¾	.05 .06
Gran, 500 lb bbls wks....lb.	.05¾	.06	.05¾	.06	.05¾ .06
Soln 50%, tanks wks...100 lb....		3.00	....	3.00	2.25 3.00
Cyanide, 100 lb drums....lb.	.38	.39	.38	.39	.38 .39
Dithiofuroate, 100 lb dr....lb....		1.00	....	1.00	..... 1.00

*&10 †Depends upon grade

Current

Zinc Dust
Whale Oil

	Current Market	1933 Low	1933 High	1932 Low	1932 High
Zinc Dust, 500 lb bbls c-l wks ..lb.	.0705	.071	.04¾	.07½	04' 0525
Metal, high grade slabs c-l NY.....100 lb.	.....	4.87	3.02	5.37	2.8. 3 52
Oxide, American bags wk...lb.	.05¾	06	.05	.06	.0485 07
French, 300 lb bbls wks...lb.	.05¾	.11½	.05¾	.11½	.08½ 11¾
Palmitate, bbls.....lb.	.20	.21	.17½	.21	....
Perborate, 100 lb drs.....lb.	.....	1.25	....	1.25	..... 1 25
Peroxide, 100 lb drs.....lb.	.....	1.25	....	1.25	..... 1 25
Resinate, fused, dark, bbls. lb.	.05¾	.06½	.05¾	.06½	....
Stearate, 50 lb bbls.....lb.	.18	.19	15	.19	.16 .22
Sulfate, 400 bbl wks.....lb.	.03¼	.03½	.03	.03½	.03 03½
Sulfide, 500 lb bbls.....lb.	13	13½	.12	13½	.12 .13½
Sulfocarbolate, 100 lb keg..lb.	.21	.22	.21	.22	.21 .24
Zirconium Oxide, Nat. kegs...lb.	.02½	.03	.02½	.03	.02½ .03
Pure kegs.....lb.	.45	.50	.45	.50	.45 .50
Semi-refined kegs.....lb.	.08	.10	.08	.10	.08 .10

Oils and Fats

Castor, No. 1, 400 lb bbls....lb.	.....	.09¾	.09½	.10	.09½	.10½
No. 3, 400 lb bbls.....lb.	.....	.09¼	.08½	.09½	.08½	.10½
Blown, 400 lb bbls.....lb.	12½	12½	.11½	12½	.11½	.12½
China Wood, bbls spot NY...lb.	07½	07½	.04.	.09½	.05¼	.07¾
Tanks, spot NY.....lb.	.07¼	.07½	.04¼	.08½	.04½	.06½
Coast, tanks.....lb.	.06⅞	.07	.04⅛	.08½	.04¼	.06½
Coconut, edible, bbls NY,...lb.	.....	.10¾	.....	.10½	.....	10¾
Ceylon, 375 lb bbls NY....lb.	.03⅞	.04	.03¾	.04¾	.04	.04¾
8000 gal tanks NY.....lb.	.02½	.02½	.02½	.03¾	.02⅞	.03¼
Cochin, 375 lb bbls NY....lb.	.04½	.04⅝	.04½	.05¼	.04½	.06
TanksN Y.....lb.	.04½	Nom.	.04	.05	.03½	.05
Manila, bbls NY.....lb.	.03⅞	.04	.03⅞	.04¾	.04	.05
Tanks NY.....lb.	.02¾	03	.02¾	.03¾	.03½	.04
Tanks, Pacific Coast.....lb.	.02½	02⅞	.02½	.03⅜	.02⅛	.03¼
Cod, Newfoundland, 50 gal bbls .....gal.	34	.35	.19	.35	.21	.30
Copra, bags, N. Y.....lb.	.01575	.016	.0152½	.019	.0175	.0235
Corn, crude, bbls NY.....lb.	.04⅜	.05	.04⅜	.07¾	.04½	.09
Tanks, mills.....lb.	.03½	.03⅝	.02⅞	.06½	.02⅝	.04½
Refined, 375 lb bbls NY...lb.	.05¼	.06	.05¼	.08¾	.05½	.07
Cottonseed, crude, mill Southeast & Valley.....lb.		*(See Oils and Fats News Section)*				
Texas.....lb.		*(See Oils and Fats News Section)*				
Degras, American, 50 gal bbls NY.....lb.	.02¾	.03	.02½	.03	.02½	.04
English, brown, bbls NY . lb.	.03¼	.04	.02¼	.04	.02¾	.04
Greases, Brown.....lb.	.02½	.03	.02	.03½	.01¾	.02¾
Yellow.....lb.	.02½	.03	.01¾	.03½	.01¾	.03
White, choice bbls NY.. ..lb.	.02⅝	.03⅜	.02½	.04⅜	.02	.04½
Herring, Coast, Tanks.....gal.	.17	Nom.	.11	.23	.....	.....
Lard Oil, edible, prime.....lb.	.....	.09½	.08½	.10½	.08½	.10
Extra, bbls.....lb.	.....	.07¼	.07½	.08¼	.05½	.07½
Extra No. 1, bbls.....lb.	.....	.07½	.06	.08	.05½	.07
Linseed, Raw, lessthan5bbl.lotslb.	.....	.105	.08	.12	.061	.078
Bbls c-l spot.....lb.	.....	.097	.072	.11	.053	.07
Tanks.....lb.	.....	.091	.066	.104	.047	.064
Menhaden Tanks, Baltimore.gal.	.17	Nom.	.09	.15	.09½	.20
Refined, alkali bbl.....lb.	.065	.071	....	....	....	.....
Tanks.....lb.	.....	.061	....	....	....	.....
Light Pressed, bbls.....lb.	.053	.....	....	....	....	.....
Tanks.....lb.	.....	.049	.....	.....	.....	.....
Neatsfoot, CT, 20° bbls NY...lb.	.....	.16½	.11¾	.16¾	.11½	.13½
Extra, bbls NY.....lb.	.....	.07¼	.06½	.08¼	.05½	.07
Pure, bbls NY.....lb.	.....	.13	.07½	.14	.07½	.09
Oleo, No. 1, bbls NY.....lb.	.....	.06½	.05	.06⅞	.05¼	.07
No. 2, bbls NY.....lb.	.....	.05⅜	.04½	.06⅜	.04½	.06
Olive, denatured, bbls NY...gal.	.76	.80	.47	.80	.51	65
Edible, bbls NY.....gal.	1.60	1.85	1.30	1.85	1.25	2.00
Foots, bbls NY.....lb.	.06½	.06½	.04¾	.06¾	04½	.05
Palm, Kernel Casks.....lb.	.04¼	Nom.	.04	.04½	.035	.04⅜
Lagos, 1500 lb casks.....lb.	.....	.03⅞	.02⅜	.04¼	.03	.05
Niger, Casks.....lb.	.....	.03⅜	.024	.04½	.03	.03½
Peanut, crude, bbls NY.....lb.	.....	.06½	.03½	.07	.02¾	.04½
Refined, bbls NY.....lb.	.07½	.10½	.07½	.11	.08¼	.09
Perilla, bbls NY.....lb.	.08½	.08¾	.05	.10½	.03¾	.05¾
Tanks, Coast.....lb.	.07½	Nom.	.03¾	.09½	.03½	.05
Poppyseed, bbls NY.....gal.	1.45	1.60	1.45	1.70	1.60	1.75
Rapeseed, lawn, bbls NY...gal.	.08	.082	....	....	.....	.....
denatured, drms, NY.....gal.	.42	.44	.34	.65	.....	.....
Red, Distilled, bbls.....lb.	.07	.07⅜	.05¾	.07⅜	.06½	.07
Tanks.....lb.	.....	.06	.05	.06	.05¼	.06
Salmon, Coast, 8000 gal tks. gal.	.17	Nom.	.11	.18	.11	.19
Sardine, Pacific Coast tks...gal.	.16	Nom.	.09½	.20	.09½	.17½
Sesame, edible, yellow, dos...lb.	.08½	.09	.08½	.10	.08½	.09½
White, dos.....lb.	.09	.09½	.10	.11	.10	.11
Sod, bbls NY.....gal.	.....	.40	....	.40	.....	40
Soy Bean, crude.....						
Pacific Coast.....lb.	.....	Nom.	.032	.035	.02¾	.03½
Domestic tanks, f.o.b. mills, lb.	.....	.061	.027	.085	.03	.032
Crude, bbls NY.....lb.	.067	.071	.04	.095	.03¾	.05
Refined, bbls NY.....lb.	.072	.078	.04½	.106	.04½	.06
Sperm, 38° CT, bleached, bbls NY.....lb.	.108	.11	....	....	.....	.....
45° CT, bleached, bbls NY..lb.	.101	.103	....	....	.....	.....
Stearic Acid, double pressed dist bags.....lb.	.09½	.10	.07½	.10	.07½	09
Double pressed saponified bags .....lb.	.09½	.10	.08	.10	.07	.08½
Triple, pressed dist bags..lb.	.12½	12½	.10½	.12½	.10½	.11
Stearine, Oleo, bbls.....lb.	.....	.05½	.03½	.06½	.03½	06
Tallow City, extra loose.....lb.	.....	03	.02	.03½	.02½	.03⅛
Edible, tierces.....lb.	.....	.04½	.03½	.05½	.03⅜	.04½
Tallow Oil, Bbls, c-l NY...lb.	.05¾	.06	.05¾	.06	.05¾	.07½
Acidless, tanks NY.....lb.	.....	.06¾	.05	.07½	.06	.09
Vegetable, Coast mats ....lb.	.06	Nom.	.04½	.06	.06	Nom.
Turkey Red, single, bbls ....lb.	.07½	....	.06¼	.07½	.06¼	.09
Double, bbls.....lb.	.12½	.13	.08	.13	.08	.11
Whale,.....						
Winter bleached, bbls, NY. lb.	.....	.072	....	....	.....	.....
Refined natural, bbls, NY. lb.	.068	.07	....	....	.....	.....

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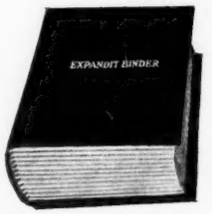

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Index to Advertisers

"We"—Editorially Speaking

Congratulations to Pittsburgh Plate and Glass upon the most interesting history of the company, its subsidiaries, and the men who have been closely identified with its growth, published as a supplement to its annual financial statement.

Dumb Dora visited the Chemical Show and we overheard her exclaim as she saw the slogan over the American Chemical Society's booth, Chemicals Catalyze Commerce—"So that's what the trouble is, and I thought all the time it was the depression!"

P. W. Gumaer's article on the compensation insurance racket in our December issue has been quoted and commented upon editorially by *The National Underwriter* and *The Insurance Field*, and one of the large insurance companies has ordered five hundred reprints. We are happy to announce that another article from him on some of the newer compensation laws and what they mean to chemical executives will appear in an early issue.

We should like to have seen the face of that enterprising chemical investigator who lifted from our display of "New Chemicals of Commerce" at the Chemical Exposition, the sample bottle of indium, when he discovered that instead of about eight thousand dollars worth of this new metallic element he had stolen some lead slug dummies.

This interesting display of the 304 new chemicals of commerce produced by our advertisers during the two years was not only highly educational, but apparently explosive for, when transferred to the display cases over in the Chemists' Club, in that rarified atmosphere, one bottle blew up with interesting results. We don't know yet why the four ounce bottle of chloracetophenone didn't break—if it had done so it would have closed the Carteret—for a few hours.

One very busy chemical industrialist certainly slipped up on his Christmas cards this year. He must have purchased them by the pictures without reading the verses inside. They were tender Christmas greetings to "Dear Grandfather".

Are contracts between employers and chemists necessary? Or haven't you given it much thought? At any rate we commend two articles to be published in our February issue under the title "Chemists' Contracts" as a topic that will prove highly enlightening to the aspects of industrial contracts, and contracts as they affect the consulting chemist. Dr. Arthur L. Norton, General Plastics, and A. L. Hall, Buffalo Testing Laboratories, will be the co-authors.

For many years it has been our pleasure to present to our readers articles reviewing the notable chemical achievements in different European countries for the year past, a custom which, to our great satisfaction, has proved highly interesting. This year, we are privileged again to renew this interest by publishing the developments for 1933 for England and Germany, through the courtesy of M. D. Curwen (*Industrial Chemist*) and Dr. Walter Roth (*Chemiker Zeitung*) who, although they have both retired from the editorship of the two papers mentioned, have kept in intimate touch with the chemical activities in their countries.

Francis P. Garvan paid no empty compliment to American chemists at the recent meeting of the Synthetic Organic Chemical Manufacturers' Association, when he said "They have more brains than a charred barrel and will solve the problem of aging wines and liquors". Ask Lewis Marks—he knows!

The famous article on "Holes in Swiss Cheese" published by one of our esteemed, technical chemical journals has a rival. "Chemical terms of the Chinese language" appeared in the January issue of the *Journal of Chemical Education*.

The Chemical Pool in the Irish Sweepstakes didn't do so well, but John Hansen, Cleveland Cliffs salesman, has just won $30,042 from the Canadian Army and Navy Veterans' Sweepstakes. It is reported that he is going to put it in the bank for his old age. We'd like to know which bank.

The depression may be over but bartering still goes on. A Chilean sugar concern is offering 40,000 tons of nitrate to a German manufacturer of sugar refining equipment.

Received from John A. Chew, three days after the appearance of our December issue: "Cancel my advertising contract at once. For the past two days I have done nothing but sit at the telephone and answer inquiries, stirred up by my announcement in your pages, and I have two basketsful of mail of the same sort yet unanswered. You can certainly boast that advertising in 'Chemical Industries' interferes with business". This is high praise indeed.

In the same vein "We" should like to congratulate *The Chemical Peddler* on their parody of said advertisement, second only to that masterpiece of theirs, the "historical institutional publicity" of Grasselli crossing the Alleghany Mountains. *The Peddler* is one of the high spots of the chemical year. We are proud to have been its daddy. It has long rivalled the *Bawl Street Journal*, and we note that it is branching out and is outshining that mythical paragon of all trade magazines, *The Toilet Paper Gazette*.

Fifteen Years Ago

From our issues of January, 1919

Monsanto Chemical purchases four-story building at 12 Platt St., N. Y., for the storage of wares and expansion of its business.

Toluol in 70 per cent. of the T. N. T. used in Government shell-making factories was by-product of illuminating gas industry in New York City.

Chemical Warfare Service distributes samples of poison gas for experiment in the manufacture of dyes.

Government cancellation of contracts demoralizes drug and chemical prices owing to heavy supplies of many materials appearing unexpectedly on the market at unusually low levels.

Perkin Medal awarded Dr. F. G. Cottrell because of his invention of the precipitation process which eliminates soot and chemicals from smoke.

New Jersey Zinc Co. moves into new seven-story building at 160 Front St., New York City. Building embodies general use of zinc materials, and from basement to roof zinc material is used for door checks, frames, window sashes and locks.